JULY 1957 2/6

The GEOGRAPHICAL MAGAZINE

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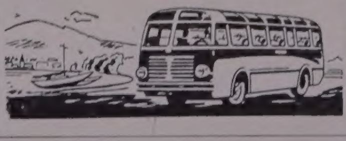

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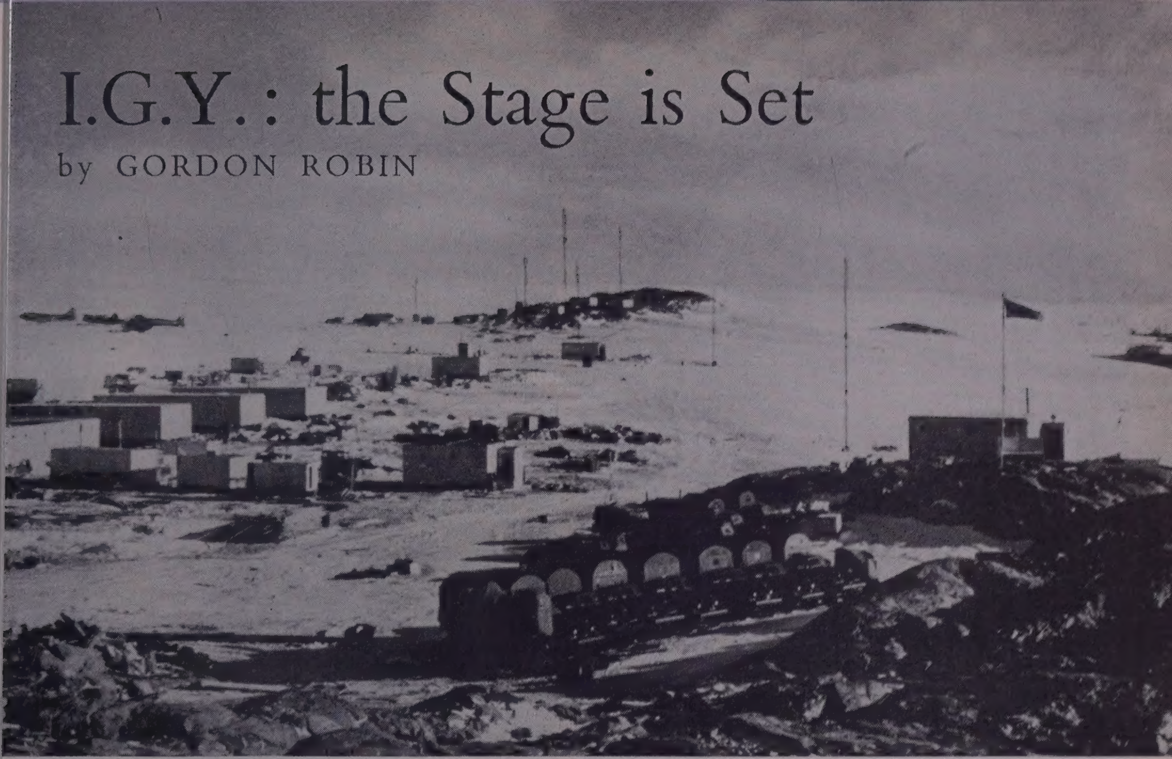
I.G.Y.: the Stage is Set

by GORDON ROBIN



By Courtesy of Soviet New

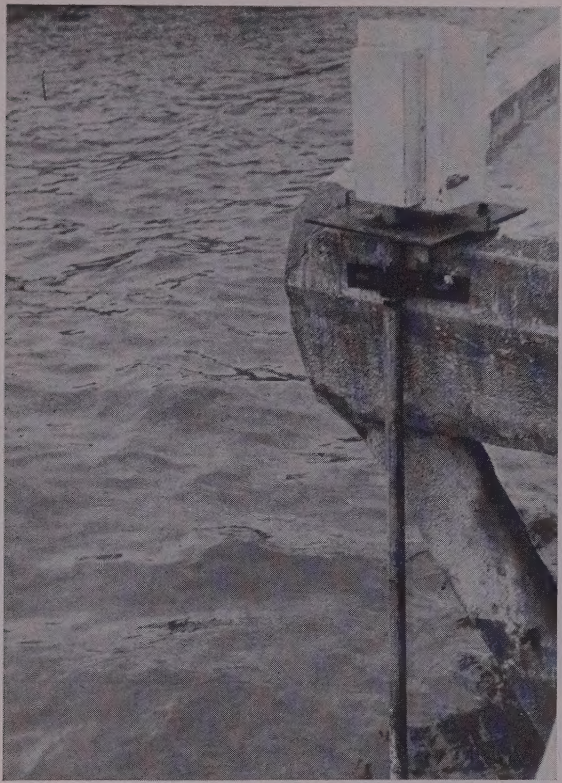
(Above) *A U.S.S.R. station in Antarctica. Fifty-six stations manned by scientists of twelve nations will be observing for the 1957-8 International Geophysical Year in the Antarctic region*

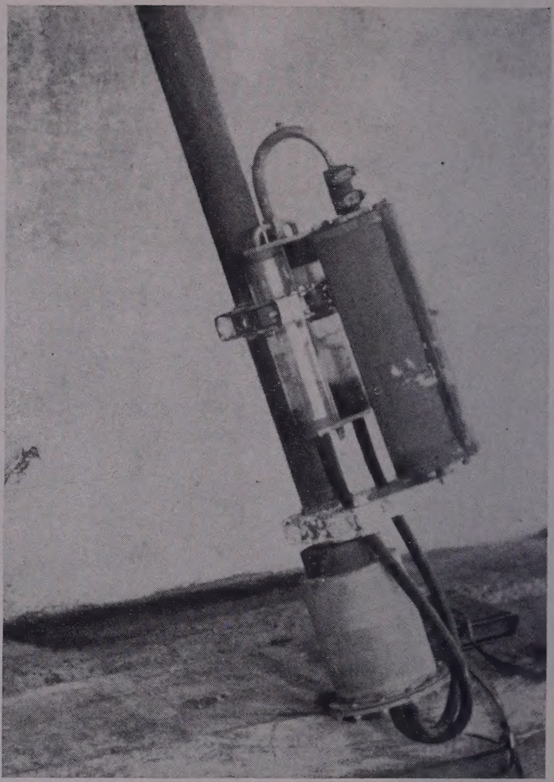
We published in April 1956 the first of three articles by Mr Robin, entitled "Why an International Geophysical Year?" In it he dealt mainly with work in the Polar regions; here he surveys various features of the world wide programme of observations by scientists of many nations which begins officially on July 1, 1957. Mr Robin, a physicist, was concerned with the preparation of British activities in Antarctica for the I.G.Y. and is now at the Australian National University, Canberra

A FOREST of masts points skywards above a group of snow-covered huts. The time is early morning in September, 1957. It is spring, for the scene is a scientific station on the edge of the Antarctic continent. A monkish figure crawls out into the brightening light, glances at the sky and the distant mountains. The sleepy look in his eyes disappears as the icy air stings his face with its sharp bite. He opens the meteorological screen and reads the instruments quickly. One hand is pulled from its heavy glove to write down some figures, then to shake and replace the thermometers. Thankfully the hand returns to the glove, since the thermometer reads -40°. A brief glance around to see that several other instruments are working properly and the figure disappears down a hole into the warm hut to enter the observations in the log-book.

This picture may sound familiar to many who have taken an interest in Antarctica and it will often occur at the fifteen stations which are being occupied on that remote continent during the International Geophysical Year, which runs from July 1957, to December 1958. The physical difficulties and the expense of reaching Antarctica, and the hazards of travelling in the interior, help to focus public interest on that continent. During the next two years, however, similar work will be carried out by hundreds of scientists in more accessible countries, probably with little departure from the obscurity normally enjoyed by most laboratory workers. Nevertheless, the obscure and the publicized, the leading scientist and the ordinary meteorological observer, are all taking part in a vast experiment.

The organization of this experiment is now practically complete. It started with international meetings of scientists who decided on the programme of work and outlined the methods to be used. The much larger task of preparing the equipment for the programme is now nearly finished, thanks to thousands of

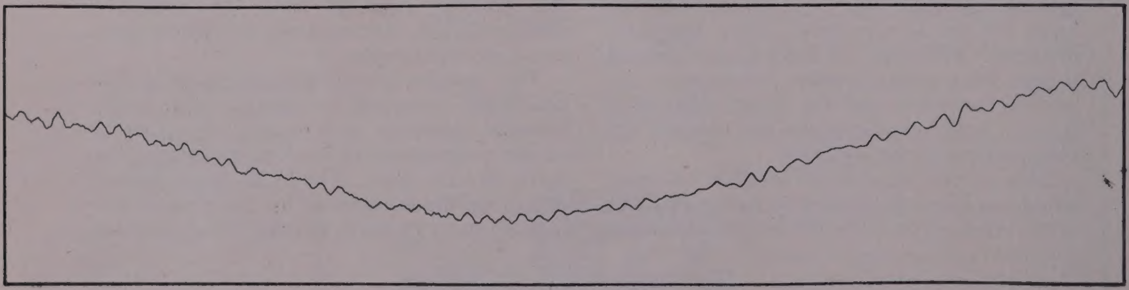




Both photographs by courtesy of the National Institute of Oceanography

Waves are measured by the length of time they take to pass a given point. The ordinary ones which may be many feet high are of short duration, lasting only a few seconds. Long waves last ten to twenty minutes and are only a few inches high. It is the latter that are being recorded by I.G.Y. observers by means of the apparatus shown here, which was evolved at the National Institute of Oceanography, Surrey. (Above, left) *The upper part of the apparatus with the box containing the recording paper; and* (right) *the underwater part. The oscillations of the waves are measured by means of differential pressures on the inside and outside of bellows contained in the short cylinder at the bottom of the shaft. The bellows are connected by a wire to the pen which marks the recording paper. Sea-water enters the large cylinder which filters it, then passes through thin copper tubes contained in the perspex cylinders; one partially eliminates the effect of tides while the other completely eliminates the short-duration waves.* (Below) *A section of the record taken at Newlyn, Cornwall, from high tide to high tide. The long undulation shows the partially eliminated effect of the tide. The smaller oscillations show the height and duration of long waves, most of those recorded here being about 2 inches high and lasting 10 to 15 minutes. The actual size of the recorded oscillations is one quarter of the size of the wave itself and the paper moves through the recorder at 3 inches an hour*

By courtesy of the National Institute of Oceanography



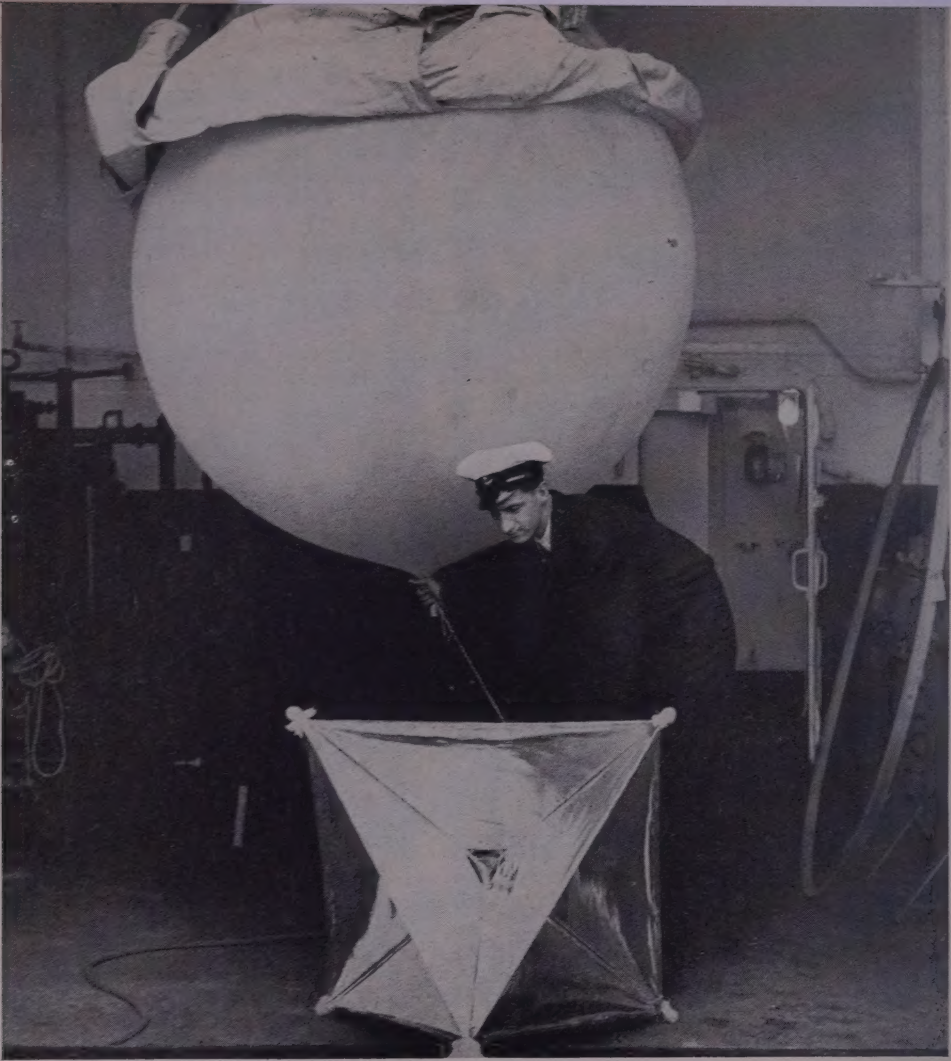
workers in offices, laboratories and factories all over the world.

To take one small example from the many, at Rome in 1954 a group of oceanographers from different countries decided that international coordination was necessary in order to understand long waves which travel over the oceans. From one crest of these long waves to the next may be some miles, so that they are not noticed by ships at sea. On the coasts, however, they can be seen as abnormal changes in sea level which last from a few minutes to an hour or more. The early long-wave recording instruments were made in order to study such waves caused by earthquakes under the ocean. However, the instruments showed that long waves which changed sea level by up to a foot or so were much more common than could be explained by earthquakes. Other explanations of these long waves have now been proposed, usually in connection with storm-centres, either over the oceans or from local storms crossing the coastline. In order to see whether storm-centres do in fact generate such waves, observations must be made at several points around an ocean. Then, from the time of arrival of long waves at the different stations, and from our knowledge of their rate of travel, we can see whether the waves started at a common point and, if so, whether any particular type of storm was present at this point at the time the waves began. The last information depends on the meteorological network and is an illustration of that need for simultaneous observations in the different sciences which is the reason for coordinating all the effort into one I.G.Y.

Once it was clear that the problem to be solved in relation to these long waves must be dealt with internationally, it was accepted into the I.G.Y. framework. Only a few specialized instruments used in the earlier research work were available, so an oceanographical institute in the United States and one in Britain each started to design reliable standard instruments which would not need much specialized maintenance when installed at such scattered points as Tahiti in the tropics, Graham Land in the Antarctic, or in the English Channel itself. In Britain the major part of this development has taken place in the pleasant rolling county of Surrey where the National Institute of Oceanography is housed. Here a young scientist, conveniently placed for consultation with industry in London, has developed a simple and reliable instrument with the help of an experienced workshop staff. Preliminary testing was done by connecting the instrument by means of a rubber tube to a bucket of water which was raised and lowered very slowly by an electric motor in order to simulate the action of long waves on a coastline. Only when the instrument appeared satisfactory in the laboratory did trial runs begin beneath a pier on the south coast of England. Additional difficulties due to the presence of silt and marine growths were encountered here, so further modifications were made and tried out. When all was in order, the quantity production of some fifteen instruments began. Now, after careful individual laboratory tests, the instruments have been despatched to different parts of the world. In Tahiti the local harbour-master will be responsible for installation and will check and change the records periodically. In Tasmania a retired Hydrographer of the Royal Navy will look after another recorder; while a young explorer will keep the instrument working in Graham Land. Developments in the United States have produced a more complex recorder, but as the supply is limited and it is not clear which is the better instrument for a remote locality, both types will be used.

While not more than a few score people will be watching long waves during the I.G.Y., hundreds will be engaged on other oceanographical work, and thousands on meteorological observations. Many of these workers will be doing their normal jobs, perhaps with some extra duties, in manning the weather-stations throughout the world which are essential for the safe piloting of aircraft. The normal network of stations will be expanded, particularly in the Antarctic, so that observations will range from the South Pole itself to not far from the North Pole, and from weather-ships at sea in the stormy Atlantic to high mountain ranges. Even so, only limited observations can be taken at these stations such as reading the barometer, thermometers, visibility, etc.; and a large part of the programme will therefore depend on instruments sent aloft with balloons. These instruments relay details of the weather back to the surface stations by automatic radio-transmitters.

A typical upper-air station may be found at the edge of a Norwegian airport. Again it is September, which in Norway is early autumn. Off the concrete runways are dusty patches of bare earth. The airfield is surrounded by the dark green of the orderly pine-trees. On the far side from the main airport offices and control-tower are two



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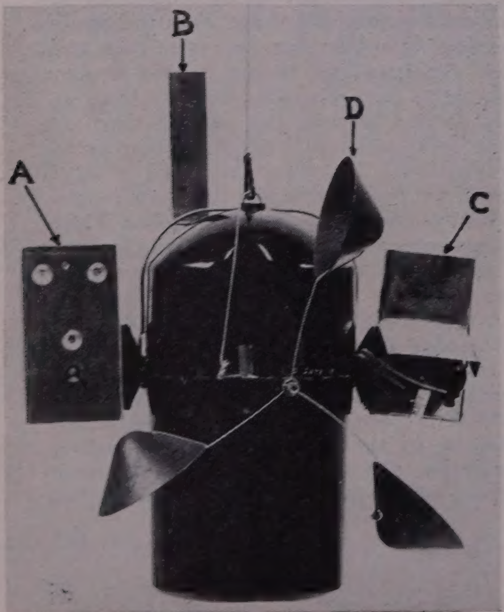

(Above) *Preparing a radio-sonde balloon to be sent up from a weather-ship. During the I.G.Y. meteorological readings from hundreds of such balloons, sent up all over the world, will be coordinated and the information to be derived from them will be pooled. They carry* (left) *special apparatus which enables them to transmit to the receivers in the weather-ship (or ashore) air-pressures, temperatures and humidity at varying heights until they burst, perhaps 60,000 or 70,000 feet up. The apparatus comprises a radio-transmitter and A: barometer; B: thermometer; C: hygrograph; D: windmill which continually switches A, B and C in turn to the radio-transmitter.* (Opposite) *The height of the balloon can be worked out from the temperature and pressure data which are thus received. The receiving apparatus also obtains bearings on the balloon from which can be plotted the direction and speed of the wind that blows it on its way* wooden huts, one a single-storey bungalow and the other, painted red, a small high and square building. Inside this second hut we hear the hiss of gas and find two Norwegians inflating a large balloon from a cylinder of hydrogen. When the balloon just lifts a weight of one kilogram, the rubber filling-tube is disconnected, the rubber neck tied into a knot, and a length of string attached. A small radio-transmitter with a windmill made from light copper buckets is tied to the other end of the string. A shout to the larger hut tells its occupants that the balloon is ready to release. Airport control, however, orders a wait of five minutes until a large airliner about to take off is well clear.

Presently all is ready and the balloon sails up into the air, its copper windmill glinting in the morning sun as the wind carries it across the pine-trees. Inside the hut two operators sit at instruments receiving radio messages from the balloon. One instrument is used to measure the direction and speed of the wind which is blowing the balloon along. The other instrument emits a series of chirps of varying pitch, which, the operator explains, indicate the pressure, temperature and humidity at the balloon. The rotating windmill switches the chirps rapidly from the small thermometer to the barometer, and from the barometer to the hygrograph, and then repeats the cycle. After three-quarters of an hour the balloon, which has been rising at about 1000 feet each minute, is in air so thin that it can only push the windmill around slowly, so the chirping slows down. The higher the balloon goes the lower the air-pressure, but the temperature, which fell rapidly to around -50° for the first half-hour, gradually rises again as the balloon ascends through the stratosphere. After a little more than an hour with the temperature around -40° and the pressure indicating that the balloon is about twelve miles high, the chirps suddenly speed up again before stopping. "Balloon burst," announces the operator on hearing this last spurt, caused by the balloon falling rapidly to earth, thus speeding up the windmill before it finally becomes tangled in the string which formerly lifted it with the balloon.

Similar scenes will be taking place at the same time all over the world. The instruments may differ a little—they may for instance be silent instead of chirping—but the information provided all helps to give the worldwide picture of weather-variations from the surface well into the stratosphere, which is the aim of the programme.

The normal meteorological balloon rarely

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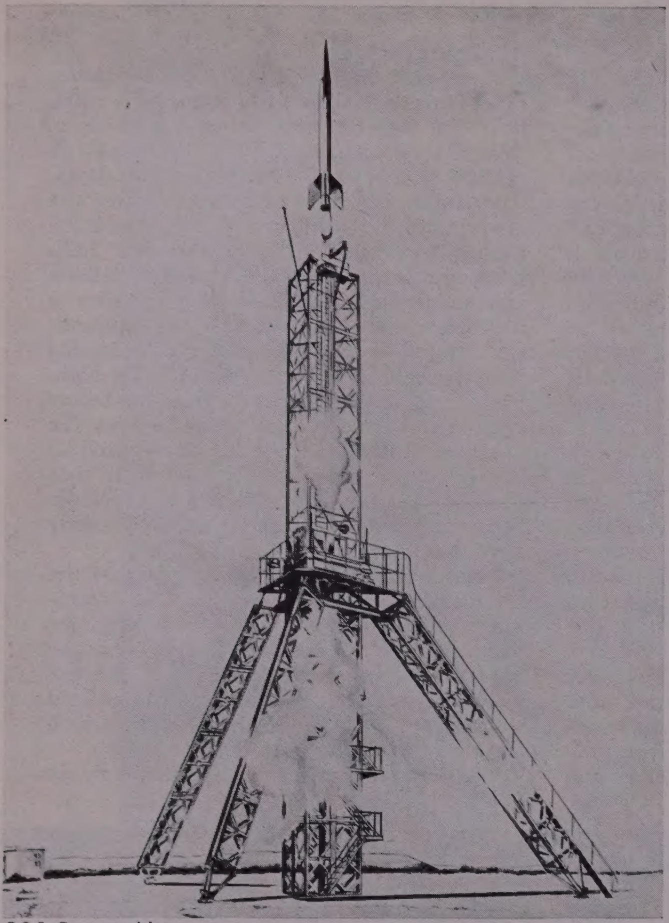

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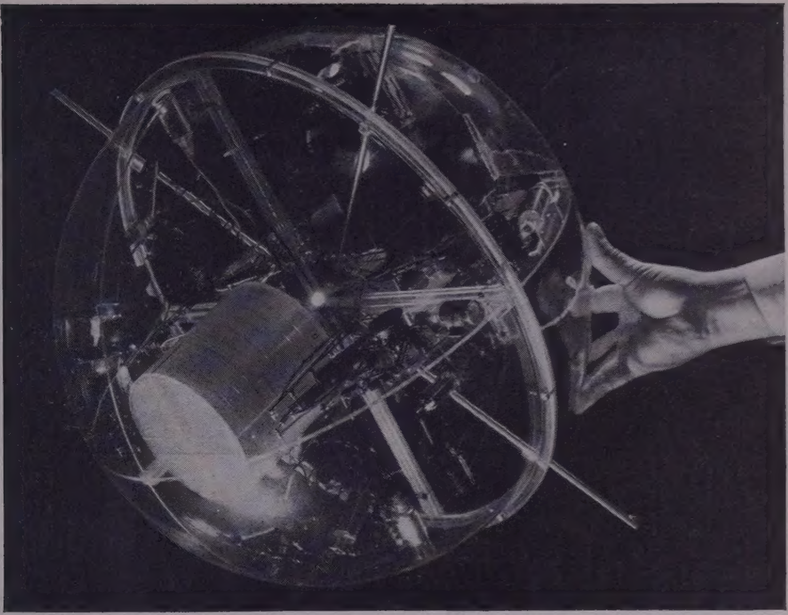
A drawing of one of the rockets designed by the Ministry of Supply for use by the Royal Society for research into atmospheric conditions at heights from 70 to 90 miles. A rocket of this type was released at Woomera, Australia, last February

reaches a height of 20 miles. However, the main glow of the aurorae comes from a greater height, while the ionosphere, which reflects radio-waves around the world, exists in varying strength from about 50 to 100 miles above the earth's surface. Of the various methods used to study these upper layers of the atmosphere, the most direct is to send measuring instruments into the region on high-altitude rockets. The development of rockets which will rise to a height of over 100 miles has been largely the task of the armed services in various countries. Even though such rockets are best known to the layman for their ability to land high explosives in enemy territory, their peaceful application in the study of the upper atmosphere is of great use to scientists interested in this field.

The most frequent launching-scene so far has been near a modern, air-conditioned town miles from nowhere in a barren desert. Here sunburned servicemen prepare the cylindrical-shaped rockets twenty or thirty feet long for their journey aloft. Meanwhile civilian scientists install delicate instruments in the rocket-head which will radio information back to earth on the density of the upper atmosphere, its electrical state, the nature and intensity of the sun's radiation, cosmic radiation and other items. The radio-transmitter for this task is similar to the radio-sonde used in the lower atmosphere, but owing to the number of different instrument-readings that it must transmit, and to the high speed of the rocket, it is switched electronically very rapidly from one instrument to another.

Once the rocket has been launched, so much of the process is automatic that the study appears rather inhuman. The human element is nevertheless of the utmost importance, not so much in the launching as in the design stage which may take place in laboratories on the other side of the world. Here scientists decide on useful experiments and make instruments to fit into the rocket-head. They must allow for a variety of factors such as the acceleration of the rocket at the start of its flight, which pulls the instruments with a force several times that of normal gravity. By contrast, when the rocket-fuel is exhausted and the rocket is coasting through the very thin upper atmosphere, there is no effective gravitational pull within the rocket, so the convection currents in gas which normally cool radio-equipment cease, and alternative cooling systems must be used. The effect can best be visualized by imagining oneself in a freely falling lift. As the lift accelerates at the same speed as the occupant, his effective weight on the floor of the lift drops to zero, leaving that uncomfortable rising feeling in the pit of the stomach.

The same absence of an effective gravitational pull will be present in the earth-



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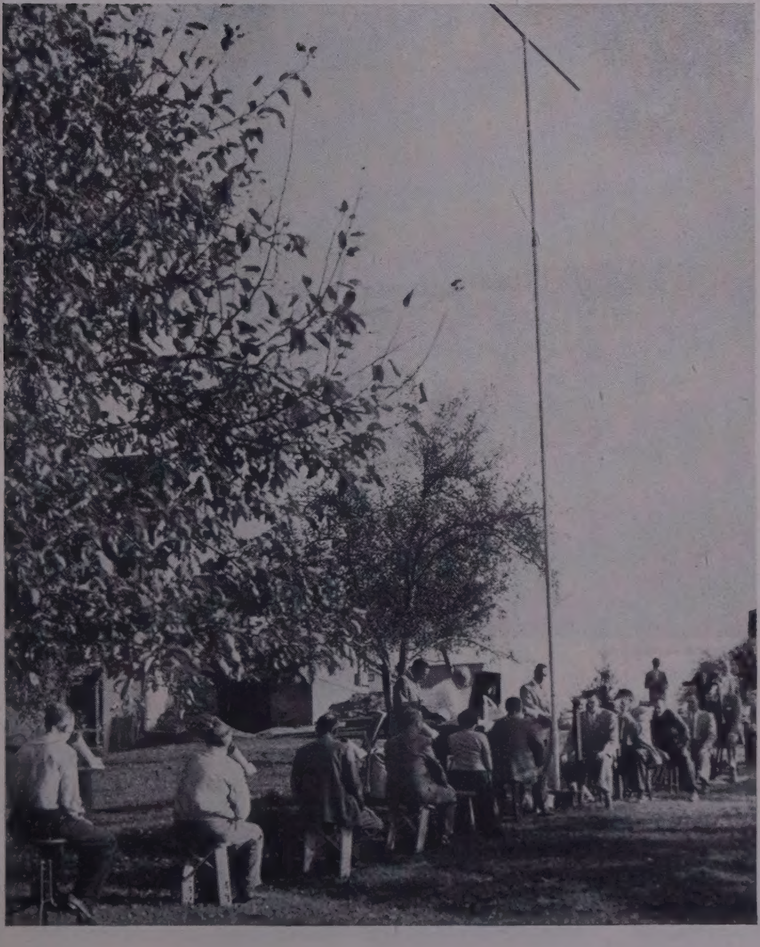
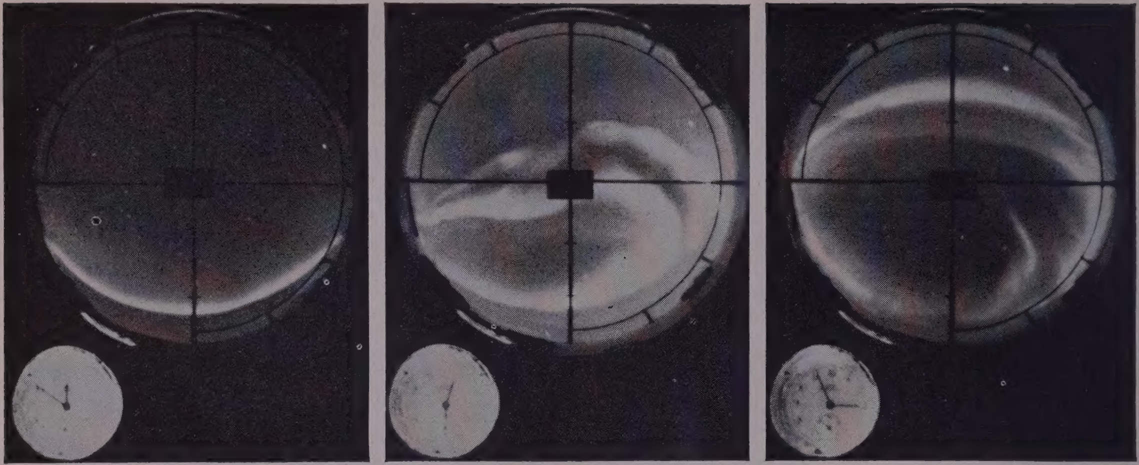
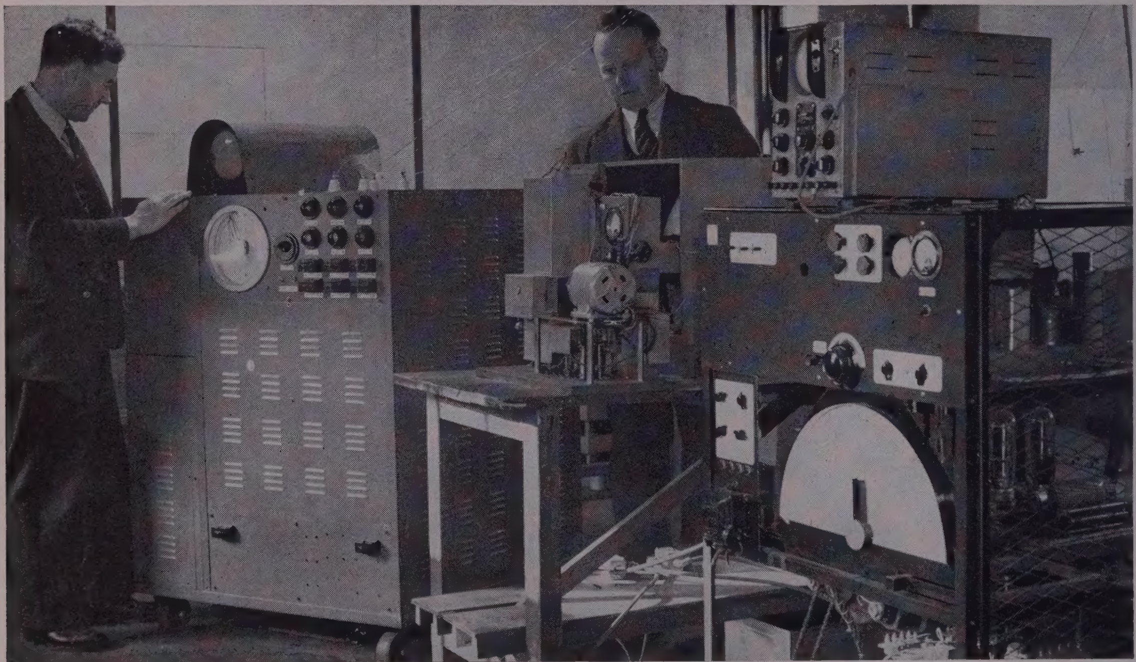


(Above) *A model of the United States' earth-satellite which it is intended to project by rockets into outer space during the course of the 1957-8 I.G.Y. It will be released at a height of 300 miles to circle the world at 18,000 miles an hour, recording and transmitting as it goes information on temperature, air-pressure, cosmic rays, ultra-violet radiation and gravity. It will also yield information on micro-meteorites in the atmosphere and mass-distribution in the earth.* (Left) *Teams of trained observers will be stationed around the world to watch its progress. Here, in the United States, one of fifty such teams is undergoing training for this task. Twelve observers sit in a north-south line facing a high T-shaped pole and centre the field of their powerful telescopes on small lights on the cross-arm of the pole. The overlapping of the fields of the telescopes will enable the observers to see the satellite as it sweeps by overhead every hundred minutes or so*



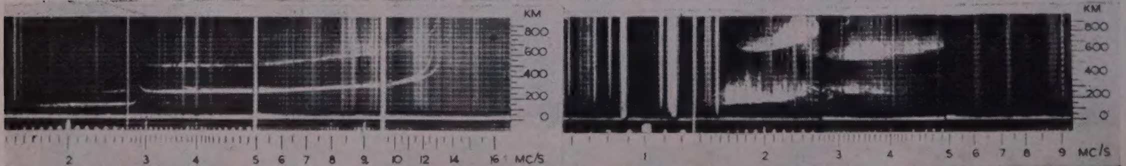
By courtesy of the Royal Society

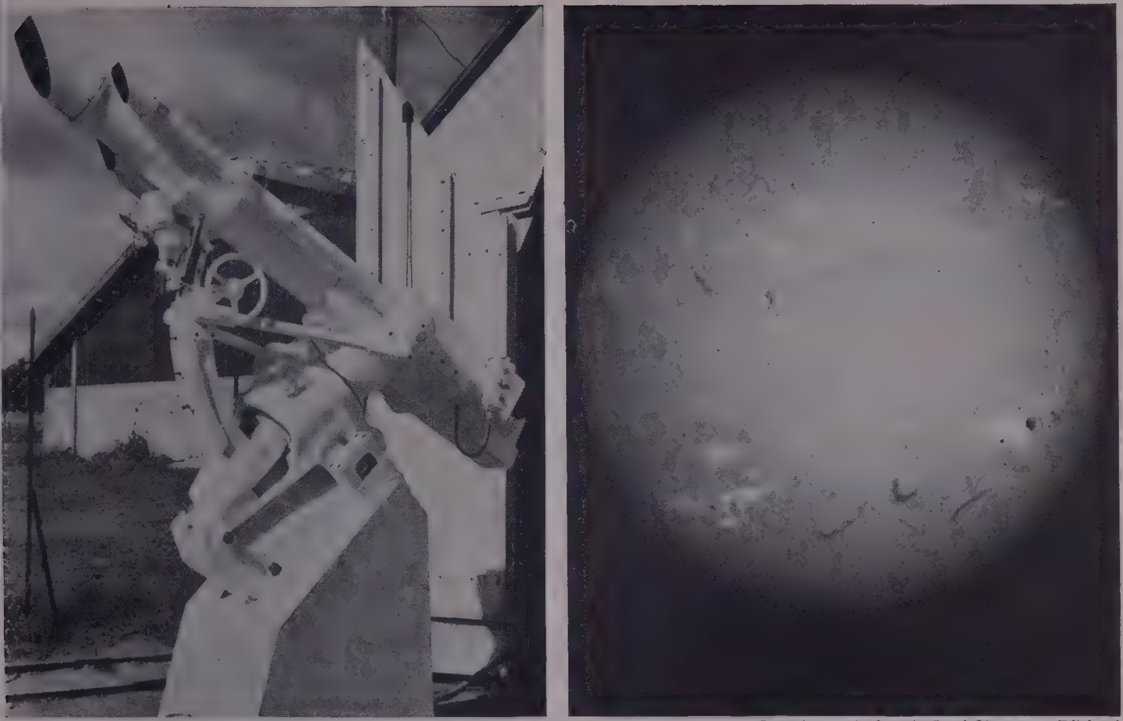
(Above) *Three phases of the aurora australis, taken with an "all-sky" camera during the course of one day at Halley Bay, the Royal Society's I.G.Y. Antarctic Base. The phases are: a single arc; the beginning of intense activity; multiple arcs. Observations of aurora australis and borealis will help to show the connection between them, the earth's magnetic field and the activity of sunspots*



Both photographs by courtesy of the Department of Scientific and Industrial Research

(Above) *Ionospheric recorders at the Department of Scientific and Industrial Research, Slough. The one on the right is an experimental type; the one on the left being that regularly used for recording hourly variations of conditions in the ionosphere (from day to day, winter and summer) by means of radio-waves sent out and reflected back to earth where they are displayed on a cathode-ray tube in the apparatus.* (Below) *Two examples of the record: left, winter day; right, scatter-type echoes*





Both photographs from the Royal Observatory, Edinburgh

(Left) *This Lyot Spectroheliograph, designed and built in France, is to be erected in Cape Town for the Royal Observatory, Edinburgh. It automatically photographs the sun's hydrogen atmosphere.* (Right) *A photograph taken by it. The belts of bright areas coincide with sunspot regions in which solar flares occur. The dark markings are clouds of cooler hydrogen gas known as prominences*

satellites to be launched by the United States and the Soviet Union during the Geophysical Year, for once they are in their orbit the outward centrifugal force due to their circular motion around the earth will just be balanced by the normal pull of gravity. These satellites will carry similar instruments to the lower-altitude rockets in order to measure phenomena 200 to 300 miles above the earth's surface. As they speed around the earth, their radio-signals will be picked up in turn by the different countries over which they will pass. The technical details of how the satellites are to be launched remain the secret of the launching country, but the scientific results will be picked up by many countries and will be exchanged freely between them. Even without radioed information from the satellites, careful observation of their track to see how quickly they are slowed up by the very thin atmosphere at that height will give new and useful information on the amount of air at such levels.

Although fascinating and exciting, rockets and satellites are very expensive, and launchings will be on a relatively limited scale. A great deal can be learned about some geophysical phenomena by much simpler methods. The Northern Lights, or aurora borealis, are one example. These occur most frequently in a circular belt at distances around 1500 miles from the North Magnetic Pole. The type of aurora, the time of its occurrence and its position can be deduced from visual observations and simple measurements of elevation, provided that enough observations are available. In Scotland such observations will be made by keen amateur observers, who will be organized into shifts. By watching the sky throughout the long, chilly winter nights, they will gather the auroral data which will help to show the connection between the aurora, the earth's magnetic field and the activity of sunspots.

The variations of the sun's radiation during sunspot activity also closely affect the ionosphere. I have already mentioned that some rockets will be equipped to study the ionosphere between 50 and 100 miles above the earth's surface. However, rocket experiments are costly and relatively few and far between. The ionosphere is so important to worldwide radio-communications that we now need to know and understand its variations hour by hour. Its main use to man is as a reflector of radio-waves, and these waves provide the main tool for its study. The Radio Research Organization in Britain and similar institutions in other countries were already making ionospheric studies at some sixty stations before I.G.Y. planning began, but a number of additional stations in remote locations will help complete the worldwide network during the I.G.Y. One will be manned by the staff of the Physics Department at Ibadan in Nigeria. Hour by hour they will collect records displayed on cathode-ray tubes of the way in which radio-waves from a transmitter are reflected back again to the earth. Their problems in maintaining complex radio-equipment in the humid tropical atmosphere will differ considerably from those of similar workers in the frozen Polar regions. There is no doubt, however, that in the field of radio the technicians and scientists are sufficiently skilled to meet these varying difficulties.

While these ionospheric studies are a very good example of the use of electrical techniques in studying the geophysical world, every kind of study involved in the I.G.Y. depends at many points on the use of electricity. In our modern civilization we take for granted the efficiency of the electricity supply. Those, however, who have stayed in an isolated Mediterranean fishing-village with an overworked electrical supply, and who remember the blackouts or dim lights when the generator is overloaded, will realize the importance of the man running the generators. During the I.G.Y., on isolated oceanic islands and at Antarctic outposts the man who can do most to make or mar the scientific programme will not be an eager young university graduate. Instead he will probably be wearing greasy overalls, with a competent but slightly worried look on his face. He will talk about the noise of the big-end, or the next overhaul, and perhaps complain of lack of a solid foundation for his precious diesel generators on this godforsaken ice-sheet. He is there not primarily because of a love of science, but as a lover of machinery, facing the challenge to an engineer to provide power to a group of scientists under adverse conditions. The records of past expeditions in different parts of the world speak volumes for the dependability and originality of these men. A successful I.G.Y. will undoubtedly put the pure scientists further in their debt.

At the other end of the scale from the mechanic, the astronomer has for many centuries epitomized the cultured man of science. He too is closely linked with, and very interested in, the results of the International Geophysical Year. We can learn much of distant stars by studying our own solar system in some detail. In particular, the part played by the sun in affecting worldwide weather conditions, aurora, cosmic rays, radio-propagation and other studies is so great that it is essential for a close watch to be kept on the state of the sun. Solar flares, great outbursts of hot gas from the sun's surface, which often precede magnetic storms on the earth, may only last for half an hour. Here automatic instruments will be of great use, such as the Lyot Spectroheliograph, designed and built in France, which automatically tracks the sun and photographs its surface every half-minute through a special filter which makes flares stand out clearly. These instruments will be installed at different longitudes around the world so that the sun can always be seen except when cloud obscures several stations at the same time. To avoid excessive cloud, the British instrument will be installed at the Cape Town observatory, from whence records will be returned to Scotland for analysis. After this, records from different observatories will be compared, and information on solar flares will then be published for the use of workers in other fields.

This routine process will cover minor flares on the sun, but any really large flares, such as occurred in February 1956, will cause great excitement and interest among I.G.Y. scientists. So many phenomena in the various studies seem to follow large flares, that a worldwide alerting system has been set up to warn scientists to intensify their observations. At these times, the somewhat dull routine of regular observations gives way to an eager desire to see whether the cosmic-ray intensity will suddenly rise a few hours after the flare has been seen, or if magnetic storms, radio-blackouts and bright auroral displays start some thirty hours after the flare. Such things do not all happen each time; and unravelling the reasons why they do not is like an especially fascinating crossword puzzle to the scientists concerned.

The stage is now set, the scientists are taking up their stations, and the instruments are being installed. The worldwide coverage and international cooperation between scientists is on an unprecedented scale. The period for study has been picked when sunspot activity is at a maximum. All that remains is for the sun to cooperate also, by turning on some special displays to enable man to grasp at a few more of Nature's difficult secrets.

China's Farthest West

by BASIL DAVIDSON, M.C.

The author has travelled widely in his efforts to discover and describe what is happening in the "undeveloped" countries and his travels have resulted in several books. The latest in this series, Turkestan Alive, *is to be published by Jonathan Cape in the autumn and covers his journey, made last year, through swiftly changing Chinese Central Asia to which the following article relates*

ARRIVED at last in the great oasis of Kashgar, I breathed a deep sigh of traveller's pleasure, and declared a holiday from all serious appointments, investigations and enquiries.

To reach this ancient capital of China's far western borderland—so far to the west that it is almost on the longitude of Bombay—I had flown out from England, weeks before, across Siberia and the Mongolian People's Republic to Peking; and then westward again across inland China, through the wild and wonderfully spacious provinces of Kansu and Chinghai, to Urumchi, the capital of the Sinkiang-Uighur Autonomous Region, and so finally to Kashgar.

Only a handful of Western travellers had managed to see Kashgar in the previous twenty years or so; and the British Consulate-General, established here some sixty years earlier in very different times, had passed into Indian hands in 1947, and afterwards closed down altogether. Now I was lucky enough to be the first of a series of new Western travellers into these remote borderlands: two or three other British writers were to follow me some months later.

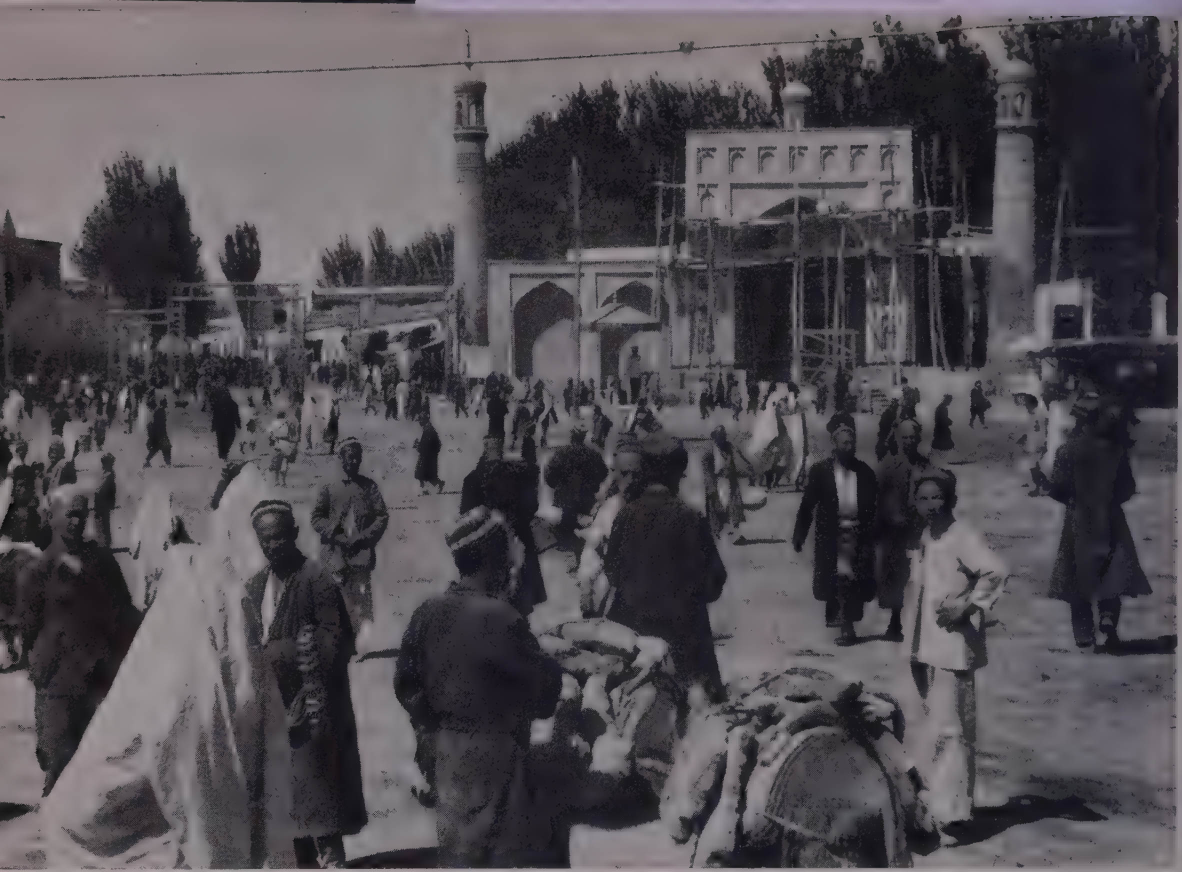
And Kashgar was no disappointment. Here in this most populous of the oasis cities of the desert of Eastern or Chinese Turkestan—the desert of Takla Makan—there was spread before one the pride and panorama of an Inner Asian culture that has barely changed in many centuries. Shut away behind the world's back-door—with the greatest mountains in the world separating them from India and Afghanistan and Soviet Central Asia, and one of the worst deserts in the world dividing them from China proper—the Turki-speaking peoples of Sinkiang cling to the old ways.

Walking in the dusty streets, one is at once engulfed in the crowds of townsmen and peasants who fill its narrow trading quarter. For Kashgar is the real capital of the Uighur people—the peasant people of the Sinkiang oases—and contrives on almost any day of the week a dizzy spectacle of Inner Asian life. Its shops and stalls are little more than shallow cupboards dug into thick street-walls behind which innumerable dwellings are concealed; but they are full of interest and curiosity.

Here you may see coppersmiths and tinsmiths; jewellers and workers in filigree and silver and gold; makers of musical instruments, their products in polished rows above their heads in the dusty workshop—onion-bulbed fiddles whose shape and sound have changed little in two thousand years; and a host of hatters, for nobody in Turkestan will move, if they can help it, without an embroidered bonnet or a skull-cap stitched with gold or silver thread or purple flowers.

Peasants bring in things that people need. They bring in boulders of rock-salt, pepper-grey, that are roped to the backs of small donkeys; lumps of ice kept over from the winter; little cones of soap shining yellow in the sunlight; legs and loins and bowels of sheep and oxen, and possibly of other animals as well; lengths of leather, flayed skins, dried strips of hide; firelighter shavings, rolls of cotton, padded overcoats, high boots of scarlet or vermilion leather, hats and shoes; wooden bolts for doors and stables; horse-shoes and toe-caps in grey iron, finely hammered by a man who has set up his forge in the street, and has a little boy to pump the bellows; booming cattle with long useless horns; cups for tea and teapots. A tremendous busyness in tiny matters fills the place.

Of the way people live in Kashgar I came to know, gradually, through various acquaintance. Now this, of course, is always a matter of luck; for although the municipal authorities of Kashgar, whether Uighur or Han (that is, what we would call Chinese) are a helpful lot, and proud of their city, the best ways of seeing and hearing are those you find by chance. This was all the more so last year, because Kashgar was traversing then its initiation into some of the great social changes that revolution has brought to China. People were settling down, after years of turmoil and suffering, to a peaceful kind of life; and they were beginning to know and experi-



photographs, except one, by the author

The main square of Kashgar, largest and wealthiest of the oasis cities of Sinkiang, with the gate of the Great Mosque. An important city of Islam since the 10th century, Kashgar has 120 mosques

ence many things unknown before. Now and then I was lucky enough to see this intricate and intimate process at work within itself.

Opposite the guest-house where I was staying I used to notice, every morning, a little concourse of women. They would gather in the street, remove their veils (although not all of them wore veils) and disappear through a gate. My Chinese friend Mei Miao, who is a member of the Sinkiang branch of the Association of Journalists (and a veteran of the revolution for all his disarming youthfulness), undertook to discover what these women were about. "It is", he reported, "an adult literacy school. For wives to learn reading and writing."

"We could go and talk to them?"

"We could," said Mei Miao.

They were of all ages, rich and poor; but of one mind, so far as I could tell, about the pleasures of this quiet push for feminine emancipation. An ageless man with a face that was the colour and texture of a dried walnut, who proved to be their headmaster, explained that he had opened the school in November 1955; and since then it had grown from 250 pupils to 1330 pupils . . . But we cut short his careful statistical replies—a little ungraciously for Sinkiang, where ceremony has its central social function—and drew some of the women into the conversation.

This matter of veils, now: why should some of them wear one, and some of them not? They pointed to an older one amongst them. She looked round a little helplessly, her face troubled with embarrassment. Then she came to life, unclasped her hands and joined in the little chorus of welcoming laughter that came when everyone saw she would speak; clasped her hands again, and began.

We could see, she said, that she was a woman who held to the old customs: she wore the veil as a matter of respectability. To show us, she unclasped her hands and pulled one of these dense black veils from over her silver bonnet; it quite covered her face and turned her at once into a mystery. With her long grey gown and red-and-grey flannel waistcoat, neatly buttoned with seven pearly buttons over her plump breasts, her silken blouse and long wide sleeves and the little silver bonnet on her handsome braided hair, she now looked like any of the well-to-do women who glide silently between the shops of Kashgar bazaar. Then she threw back her veil and her good housewifely face, absolutely unmysterious, glowed with the pleasures of independence—in school, at least—and the two or three gold-crowned teeth she had, signs of wealth and beauty, glittered in her soft smiling mouth.

Her husband, she went on, was not a bad man. This was taken, one could see, as highly qualified praise; heads were nodding in sympathy. Her husband treated her well; he was not poor but a trader, and she had never had to go out to work. She could stay at home and keep her hands white and soft. At which she unclasped her hands so that all should see; and they were indeed white and soft, plump hands with mock ruby rings on three or four soft white fingers. Everyone was loud in admiration.

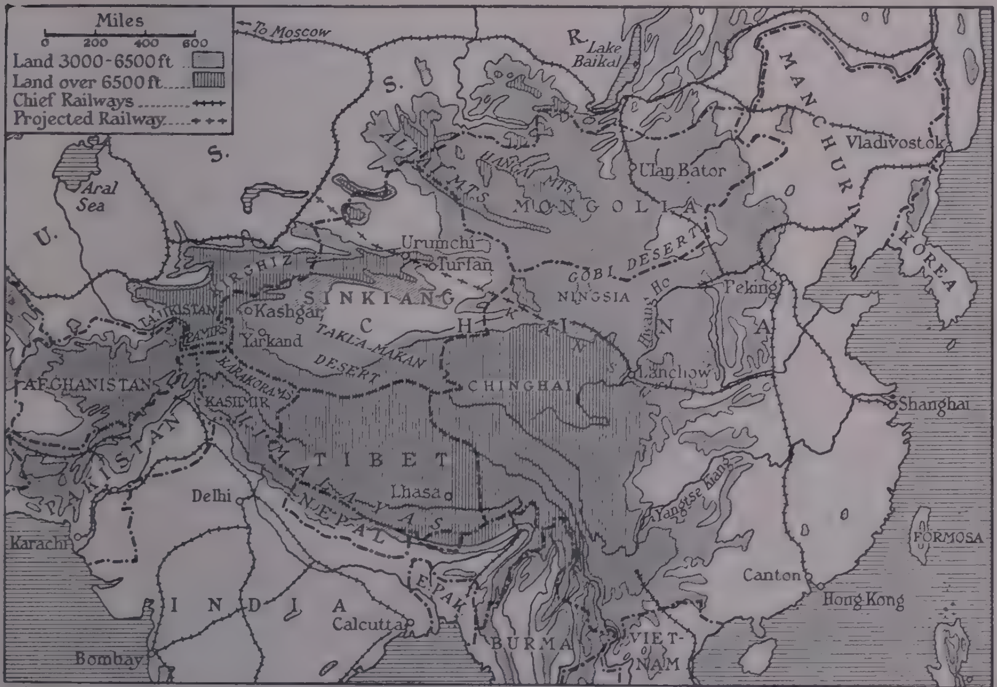
"But she says it was dull," explained Mahmud, my interpreter with the Uighur people, "she says that she sat at home and the canary sang to her and she was dull. She was sad. Her life was useless to her.

"She could not make up her mind to join the reading school. She wished to learn, but she feared for her reputation. Her husband respected her. He had never taken a second wife, although he could well afford to. Would he still respect her if she learned to read?"

In the end she had overcome her scruples; and her husband said nothing against it. "Now she says she can read quite well," Mahmud explained; "she can read the newspapers. She can even write business letters for her husband. She says that she does not sit at home and do nothing. She reads to the old people of the neighbourhood. She teaches them to read as well."

A simple story, no doubt; and yet out of this woman's mouth there might have come, had I only had a tape-recorder and the time, an epic version of the story of woman's boredom and subjection. Through all these uncounted centuries, here on the bolted threshold of Inner Asia, these women would have "listened to the canary" and prattled their love-songs, and endured. The big social changes of the last few years already mean a good deal to the men of these borderlands; they will mean, perhaps, even more to the women.

A younger woman led to an interesting encounter. She told me that she had learned



A. J. Thornton

to read in defiance of her father, and that her father was a senior *imam* of the Great Mosque of Kashgar who had forbidden her to do anything of the kind, since custom and decency, in his opinion, were inexorably against it. So she had done it on the sly. "But then", she said, "my father changed his mind. He is glad that I have learned to read."

Now the recent history of Sinkiang, over the previous quarter of a century or so, was one of nationalist wars and religious wars; and the Islamic clergy had suffered a good deal. How far would this old man have abated in suspicion of the revolutionary tide that was flowing out of China into this far north-west?

A day or so later, at this young woman's invitation, Mei and I called on Abdul Rahman Haji, who, as you see in the photograph that I took of him with his daughter, wears the white turban of the Mecca pilgrim. We found him waiting for us in the narrow courtyard of his house—tucked away through a maze of covered streets that open off the main thoroughfare—and a little astonished at welcoming such an outlandish foreigner. He had never before, it came out, spoken to a Christian; and was even more interested in me, as an oddity, than I was in him. Unhappily for him, good manners forbade him from asking more than formal questions: a limitation under which Christians, for the most part, are luckily not found to suffer.

He told me that in the beginning of the revolution here—in 1949, when most of the local Kuomintang leaders joined the triumphant revolutionary cause—many of the *imams* and *ahuns* of Kashgar (the deans and deacons, as it were, though strictly speaking Islam has no priesthood) had feared another sharp reversal in their fortunes. They had been against the new government; but the new government, much to their surprise, had neither molested them nor prevented them from preaching Islam. Now, accordingly, they were reconciled to the new government; and the new government, in further proof of its benevolence, was giving money for the much-needed repair of mosques and shrines. And the Great Mosque, indeed, was in scaffolding at the time.

It is in this purely physical repair of the fabric of daily life in Sinkiang, much dilapidated after many wars and repressions, that the Chinese revolution seems most impressive here. So far there are few luxuries: the oasis cities of the Takla Makan have yet to regain their mediaeval splendour (such as enabled Marco Polo, passing through Kashgar in the closing years of the 13th century, to say of it that "Kashgar has many fine gardens and vineyards and possessions, and many merchants who travel the whole world"). Yet a little new building may be seen. Kashgar has an excellent new hospital and is beginning to have, for the first time in history, a medical staff capable of dealing with the pains and worries of the city's 150,000 people. It has a new guest-house for visitors, an agreeable public bath establishment, and some new schools.

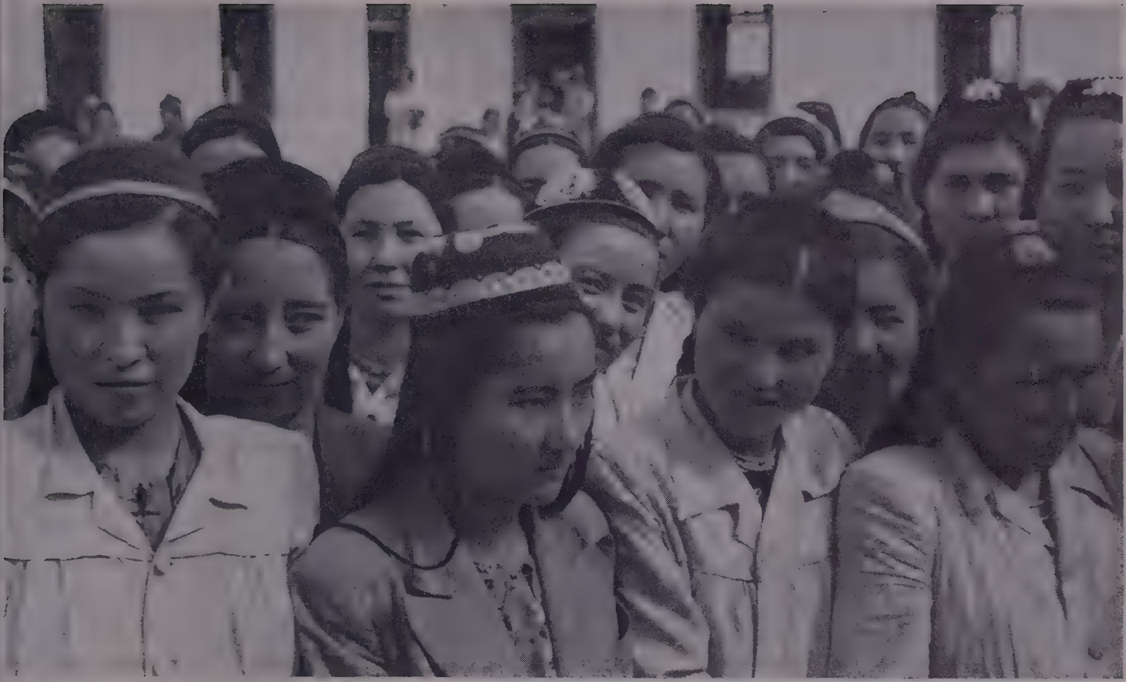
There is also an awakening of the arts of entertainment. It was here at Kashgar, on a glowing starlit night, that I watched the "Star of Sinkiang", the unforgettable Kembernissa, dancing at the head of the Kashgar city dance company; and glimpsed the long story of folk-art here that includes, surely, some of the pleasantest love-songs in the world:

> When I beheld thy footsteps beside the lake
> I wept big tears,
> So that the sand on the lake bottom
> Was dimpled with them.
> Thou art like a princess:
> Thou drinkest thy tea from vessels of silver . . .

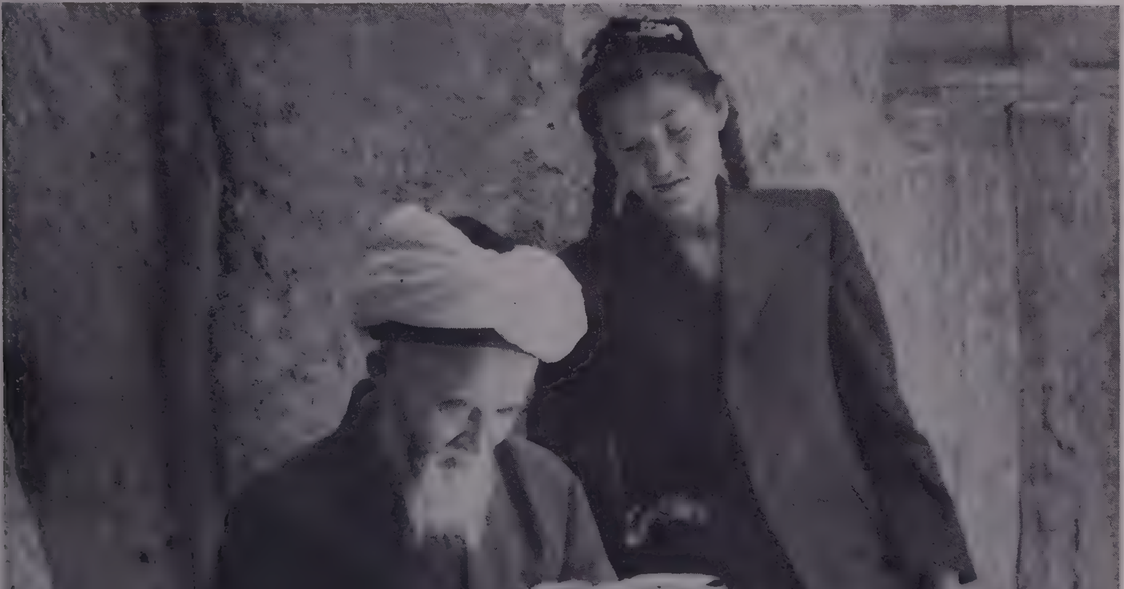
It is of women like Kembernissa, sombre of eye, superb of movement, lissom, full of fire, that these love-songs of Sinkiang were written down the ages.

Here in the wide oasis of Kashgar, with its million inhabitants, the Uighur people are really at home. This is where their culture flourishes. And on that the dancers of Kashgar said to me: "We have the best performers. But Urumchi steals them from us. It's because they're the capital, they have more means." Later on at Urumchi I saw that this was true; the Urumchi dance company is one of the finest in all Asia and enjoys, into the bargain, the new advantage of a national theatre with a stage that is big enough for eighty dancers at a time.

Such pleasures apart, the social scene in these far western oases is one of physical repair and renovation. The pale green fields that fringe the sandy wilderness are widening and deepening from the spur of new and larger canals and a more equitable sharing of irrigation water. Now that the cooperative movement has drawn nine peasant families out of ten into its system, they are reorganizing their agriculture on a more efficient and rational arrangement. They are moulding small fields into larger fields and filling in boundary-ditches; so that when you fly over these lands—for a twice-weekly service plies between Kashgar and Urumchi—they seem as though made young again, with the



(Above) *Uighur wives of all ages at an adult literacy school in Kashgar who seemed convinced that times have greatly altered for the better.* (Below) *One of the pupils at the house of her father Abdul Rahman Haji, an* imam *of the Great Mosque who wears the white turban of the Mecca pilgrimage*

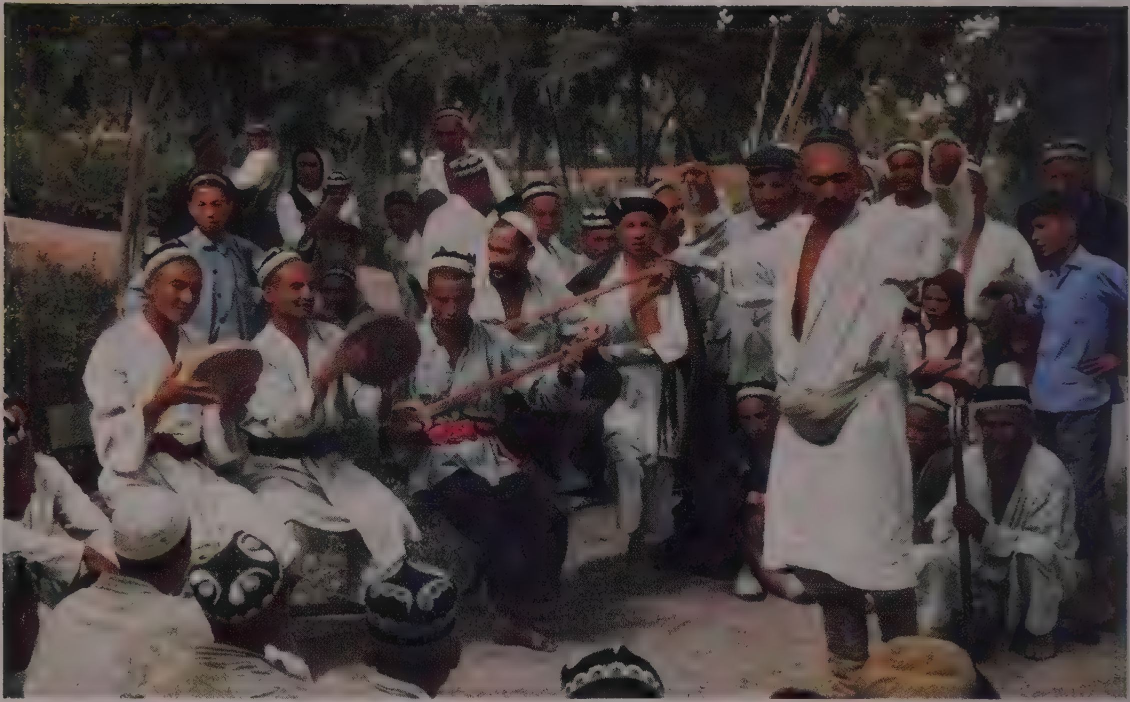


(Left) *Sinkiang, or Chinese Turkestan, is rich in contrasts. The veil is worn by Kashgar women out of deference to old tradition; for them it is a matter of social prestige. But many old barriers and customs are being broken down by the surge and swing of the Chinese revolution.* (Below) *Peasants of the desert fringe—many of them newly emerged from serfdom—are now working the oasis land with modern methods; they are beginning to use machinery on the larger fields and are taking their first steps in rational farming. Sinkiang follows the rest of China in all this, though at a somewhat more leisurely pace. Land reform was completed in 1953; but peasant cooperatives, making new farming methods possible, have since grown in size and number until they include most of the irrigated land. Their main problems are to improve farming technique and find the means of bringing much more water—whether from wells or mountain streams—to this fertile but arid fringe of the great Takla Makan Desert*

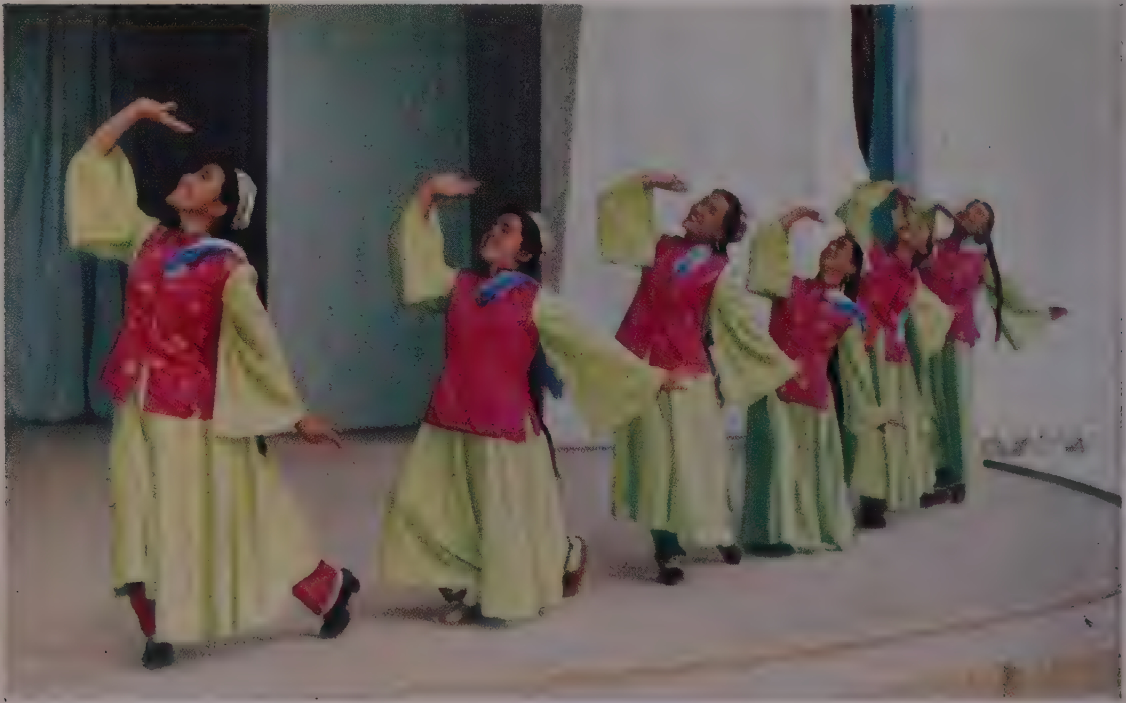
From the author

(Right) *Yarkand: part of the cloth-market and* (below) *a hatters' cooperative. Situated at the eastern foot of one of the most notable passes through the Karakoram Mountains, Yarkand used to be the Chinese terminus for caravan trade with Kashmir and India. This trade with India is now completely at an end and the textile needs of Yarkand are supplied either from China proper or else from a big cotton-mill newly established at Urumchi, the capital of Sinkiang, although a little hand-woven silk is still made in Yarkand itself. Nearly all the handicraft workers in Yarkand have lately reorganized themselves on cooperative lines, just as they have in China proper; and Yarkand, when the author was there last summer, had five hatters' cooperatives like the one shown here. These hatters are stitching Uighur bonnets of a kind that are especially sought after on account of the brilliance of their embroidery. They told the author that business was looking up after many years of chaos and inflation*

All Kodachromes by th



(Above) *A Kashgar peasant dancing to stringed instruments called* ravat *which have changed little in shape or fabric over the past twenty centuries. Boys and girls from village teams compete for places in* (below) *the state-financed Kashgar dance company which gives a most polished performance*



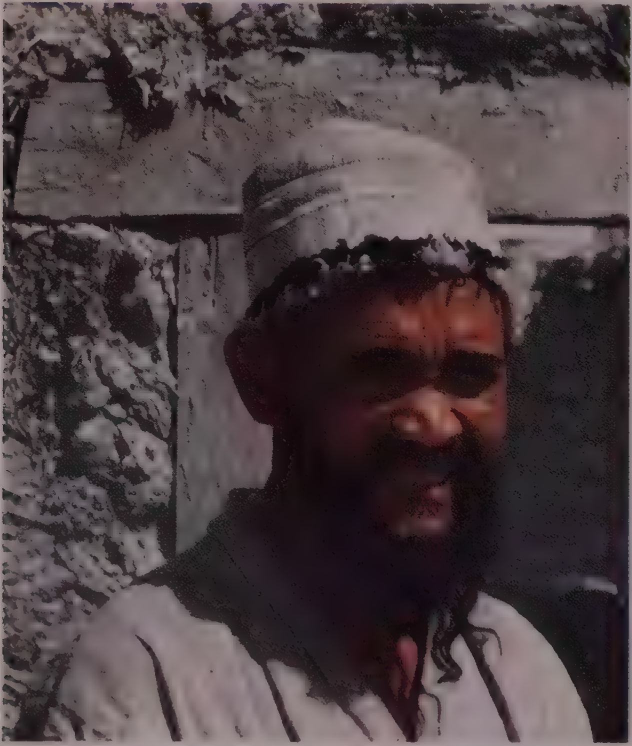
Kembernissa, an Uighur girl of great charm and professional skill, continues as star of the Kashgar dance company a living tradition that goes back to the remote mists of Central Asian history

worried lines of dwarf land-ownership beginning to be smoothed away.

With the work of renovation there goes emergency help for some of the old crafts. Most of these—like the ancient silk-weaving of Yarkand—are being saved at the eleventh hour; a few more years of anarchy and inflation, and they might have disappeared altogether. Now they are picking up again thanks to stable and expanding markets and regular supplies of the materials they need. Of all that I caught a glimpse while visiting the silk-weavers of Yarkand (who defied photography, for they worked in a half-lit barn) and some of the Uighur cap-makers and embroiderers of that ancient city. Like cobblers with whom I had talked in Turfan and metal-smiths and lock-smiths and leather-workers in Kashgar, these cap-makers of Yarkand had lately formed a cooperative of their own. Their manager, a bearded man of middle age, said that there were six such cap-makers' cooperatives in the city; and that this one had a membership of thirty-two families. They had followed the blacksmiths who had gone into a cooperative two years earlier. "Those blacksmiths had lived badly. Then we saw them on bicycles."

What could a practised hatter earn?

He said that one could make fifteen hats in ten days and perhaps earn 35 or 40 yuan a month—£6 or £7 at the official rate, which is a fair one. This was more, he said, than they could have earned before; and for Yarkand,



(Above) *Five peasants of the Yarkand oasis who spent a morning telling the author of their new producers' cooperative. They were all born into extreme poverty; but now, they said, they had persuaded 688 neighbouring families to pool their land and were working an irrigated area of about 1600 acres—a far larger unit than even the biggest Sinkiang landlords had ever worked in the old days.* (Left) *Another peasant whom the author met by chance on the road south from Kashgar. When asked what he thought of the new cooperatives he answered that his eldest son was the secretary of their local cooperative and that he himself was a member of it.* (Opposite, top) *A different Sinkiang people for whom life has greatly changed in recent years are the Kirghiz of the Pamir whom the author visited in their summer pastures in the mountains west of Kashgar. In springtime they climb with their flocks and herds into the high grasslands near the snow-line.* (Opposite, bottom) *Here, on a sunlit mountain-top, a group of girls listen to what their teacher said was a geography lesson*

A Kirghiz herdsman, a local official of the Pamir-Kirghiz Autonomous Region, who accompanied the author into the mountains from the valley-settlement of Bostan Terek

he thought, it was a decent living wage. It seemed very little for such fine workmanship.

These Uighur peasants and craftsmen and traders of the desert fringe are not the only people who live on China's most westerly borders. Above them in the white-shouldered mountains of the Pamir there is also a quite different kind of people: Kirghiz and Tajik herdsmen who drive their sheep and goats and cattle from winter valleys to summer pastures, year after year, and live in tents above the smoking desert dust.

I paid some of them a visit after returning from Yarkand; and they lived, I thought, an idyllic life. Here on this most western tip of China, though, surely they would be a good deal affected by the neighbouring Soviet republic of Tajikistan? They looked at me wonderingly: did I know how far it was to the frontier across those mountains?

Mahmud translated: "They say it is seven days' riding to the frontier in summer-time. In winter-time, they say you cannot reach the frontier at all."

These Kirghiz are a bold and handsome people; but perhaps their life is not really so pleasant as it seems. For they are still a very poor people. I spent a good many hours in moving from one hospitable *yurt* to another, sitting on their carpets and eating their *chuwatti* and their *shish kebab* on long black skewers, and listening to the tales they told of today and yesterday. And then, as those mountaineers spoke of their past and their present, it seemed to me that they were like people who had emerged from a long night of howling storms into a calm quiet dawn. They were grateful to the new government for giving them a wide measure of home rule, so they could order their own domestic affairs and elect their own governors; and even more grateful for a drastic reduction in taxes that the old regime had mercilessly levied on them. Best of all, the country was at peace.

At midday they had their great daily event: the sheep came pouring in from the neighbouring heights. They would call me out of a *yurt* to see this; and it was something to remember. High above us the smooth slopes of the Pamir glittered against a pale blue sky; and then, not far below the snow-line, we could see what looked like many small waves of rolling stones, and these as they came lower turned into flocks of sheep that swept in past us with sharp clicking feet and swarmed around the yurts. The children whooped and ran with them, and beat their hands until all were home again.

Towards evening we bade farewell to our Kirghiz friends and plunged into the violet dust-cloud that rolled its hot breath to the foot of the hills below.

Mouse-Hunting in the Peruvian Andes

by SYDNEY HARLAND

A childhood spent in Peru was of material assistance to the author in the course of the expedition which, with support from the Wellcome Foundation, he and two other Cambridge medical students undertook last year. He brings their experience of life at high Andean altitudes into broad relation with their scientific aims

All Kodachromes by W. D. Graham

A woman of Cuzco in traditional dress. She is standing before a wall of Inca masonry in which no mortar was used, each stone being fitted exactly against its neighbours

We went to Peru to catch mice. Not ordinary mice, but house-mice living at high altitudes. We were interested in the inherited changes which may have occurred as a result of exposure to the cold, lack of oxygen and increased cosmic radiation, our main interest being the possible effect of increased background radiation due to cosmic rays. We chose mice to work on as these animals could be caught and taken back to England for detailed analysis under controlled conditions. We decided that Peru was the best place to work, not only because some of the highest human settlements in the world are in Peru, but also because the high altitudes are accessible from the coast. In addition we had many contacts there, the most important being the Institute of Andean Biology at Morococha, a small town 15,000 feet up in the western cordillera of the Andes.

We were equipped with everything from geiger-counters to mouse-traps. Besides our scientific equipment we had a tape-recorder lent to us by the B.B.C. for, apart from our scientific objects, we were interested in the people, their mode of life and the kind of music they played.

We landed at Callao which is the port for Lima, the capital of Peru. The arrival of three medical students intending to catch high-altitude mice aroused much comment in the Peruvian press, but when we approached people for assistance and advice we found them very helpful in spite of our unusual mission.

When we got to the little mountain villages the effect must have been even more startling, but as soon as the inhabitants knew what we wanted, they did all they could for us. We would knock at the door of a house and

These four Indian girls had attended a religious ceremony at Pisac, a little market-town north of Cuzco. Markets are often held on Sunday so that the Indians can combine church-going and trade

ask: “Have you got any mice?” With our bad Spanish, this usually led to complications and explanations. “No, we are not selling mice, we want to catch them, to take back to England.” “What for?” the woman would ask suspiciously. “To study,” we would reply. This usually satisfied her, for then she would proudly begin pointing out the places all round the walls where mice ran at night and the mouse-holes in the corners. We would set the traps in the most favourable positions.

In this way we got to know the interiors of Indian huts quite well. Generally they consisted of a single room, small, with no windows but with the earth floor well swept. Sometimes the walls were papered with newspaper, “to keep out the night air which is unhealthy”. The cooking was done on a primus-stove in one corner; there were usually potatoes simmering in aluminium pots. The family slept on low beds covered with rugs.

The houses always looked incredibly crowded since every available inch was crammed with things. Cobs of Indian corn and llama-meat hung drying from the ceiling: you had to be careful to avoid getting it in your hair. There were sets of spare parts for machinery, antique gramophones and old motor-car tyres, the last being useful for making shoes. The Indians are very acquisitive and pick up anything that has no apparent owner, a habit we found inconvenient as we used to make mouse-cages out of old milk-tins, but the Indians liked to collect them too and so they were hard to come by.

We slept at the American mining-camp owned by the Cerro de Pasco Mining Company at Morococha. It was an extremely comfortable place, with excellent food, and amusements such as bowls and golf; for the Americans take their civilization with them wherever they go. But we could rarely enjoy these things since most of our evenings were spent cleaning out old milk-tins.

The country around Morococha was very bleak. The cold and lack of oxygen prevented all but the hardiest of plants from growing. In the mining-camp many people had gardens, but they had difficulties to contend with: a lettuce took a year to grow and ‘annuals’ took as much as three years to flower. One of the Dutch miners was very proud of his tulips which had come from below sea-level!

The camp was surrounded by peaks

W. D. Graham B

(Above) *The Andean mountain villages of central Peru, conglomerations of thatched mud-huts, were the scenes of the mouse-hunting activities of the expedition.* (Below) *Its members were followed like Pied Pipers by hordes of children as they collected mice in cages contrived from old milk-tins and gauze*

W. D. Graham B

honeycombed with the shafts of old and abandoned mines. Between the mountains were grassy plateaux and heaths. The mountains seemed impassable, but here and there we saw little lines of llama-trains apparently going straight over them. Our miner friends told us that the Indians always take the shortest route even if it means going over the top of a mountain. Sometimes these llama-trains appeared out of the blue carrying very rich silver-ore to sell to the mines, but nobody could find out where they came from; all they would say was that they had come a long way. The Indians seemed strangely indifferent to the lure of wealth. Some of them had little mines, just a hole in the rock containing a vein of silver, and whenever they wanted some cash, they would go along and knock off a piece of ore and sell it.

Leaving the high altitudes and going east, the road to Oroya, which is the mining centre of central Peru, is very bad. Here the mining company has constructed a town in the middle of a wilderness at the junction of three valleys where a vast chimney pours noxious fumes into the air and the workers armed with respirators and helmets operate the smelters. Every day trains loaded with lead, copper, silver and zinc, refined to a high degree of purity, travel down to Lima.

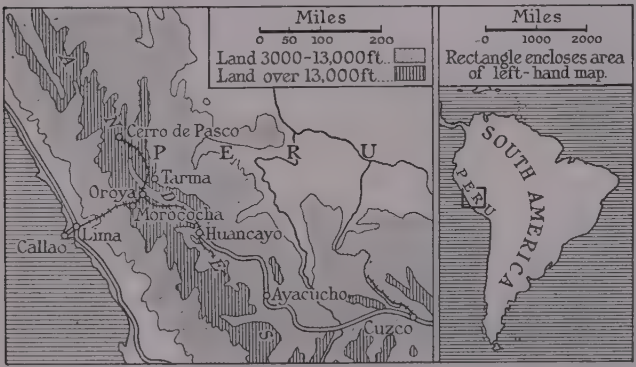
From Oroya we drove to Tarma. It was a very pleasant change from the industrial hell of Oroya, for the Tarma valley is most beautiful. We drove down it one afternoon as the sun was getting low. The top of the valley is quite high, about 13,000 feet, but in an hour you descend from the sparse heath populated by a few sheep, down through a fertile valley, to the beginnings of the jungle at 7000 feet.

It was harvest-time when we were there, and the yellow fields were dotted with people threshing the wheat by driving oxen round and round over it. Others drove herds of loaded donkeys to their villages in the valley.

Their houses are made from damp earth placed between wooden forms and then pounded. To keep the rain from washing it away, they put tiles, or grow cactus on top of the walls. We were impressed by the houses near Tarma; they looked clean, were roofed with tiles and around them grew tall eucalyptus trees. On the road we passed many trucks going up towards Lima loaded with fruit and vegetables from the fertile jungle beyond Tarma. We were told that the future of Peru lies in the jungle, for not only is it good farming land, but oil has been found and there is talk of uranium deposits. The great difficulty is transportation. Until roads are built much of the best country is inaccessible: the oil-derricks had to be transported all the way up the Amazon since it was impossible to get them to the spot from the Pacific side of the country.

But although the future lies in the jungle, Peru's past belongs to the high altitudes. This was very noticeable in the Tarma valley. High above the villages, the mountain-side was carved into terraces, which are still cultivated, as they were in the days of the Incas. In contrast to the modern road which wound restlessly across the valley seeking the most favourable gradient, the old Inca road ran up the bed of the valley as straight as a die. All over the country, especially in the south, are ruins of the Incas. Besides the famous buildings at Cuzco, the old Inca capital, and other centres there are the roads and the many terraces on the mountains. But the Spaniards destroyed the social organization, a kind of enlightened state-socialism, which the Incas had imposed and with it the complex system of engineering, irrigation and agriculture needed to maintain a high-altitude civilization. Everywhere, now, you see abandoned fields and crumbling terraces and the Indians have difficulty in keeping themselves from starvation.

In the market town of Huancayo we spoke to an agricultural expert working with S.C.I.P.A. (Servicio Cooperativo Inter-Americano de Productos y Alimentos), an inter-American aid organization. He told us that at that moment there was a famine in southern Peru due to drought, whereas under the Incas there were corn reserves against famine; while widows and orphans did not starve as land was set apart for their



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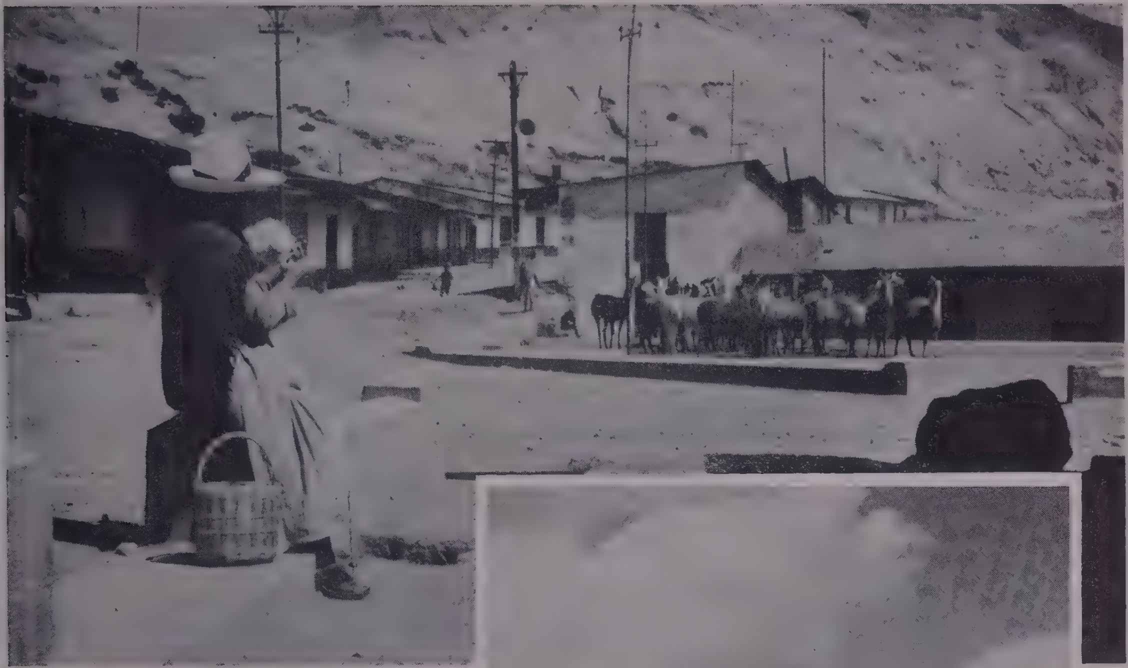
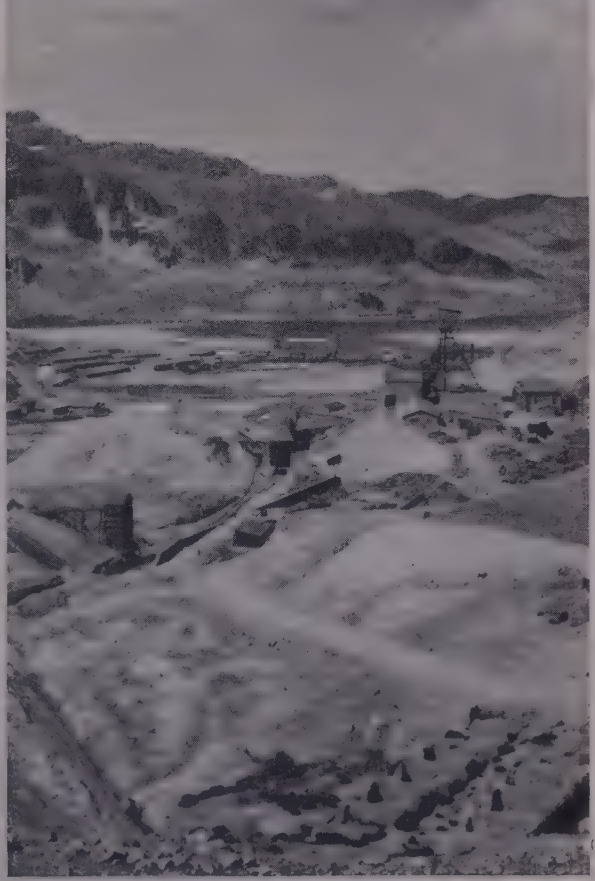


Sydney Harland

(Above) *Morococha, situated in the western cordillera of the Andes at about 15,000 feet above sea-level, owes its importance almost exclusively to the industry represented by* (right) *the main shaft of its copper-mine. All around are completely barren mountains, riddled with the shafts of old workings. Morococha is the centre for outlying villages and to it come llama-trains loaded with ore (for the mountains are rich in minerals) and other commodities for sale. The women spin the llama-wool with hand-bobbins which swing like pendulums as they walk or rest for a moment by the roadside*



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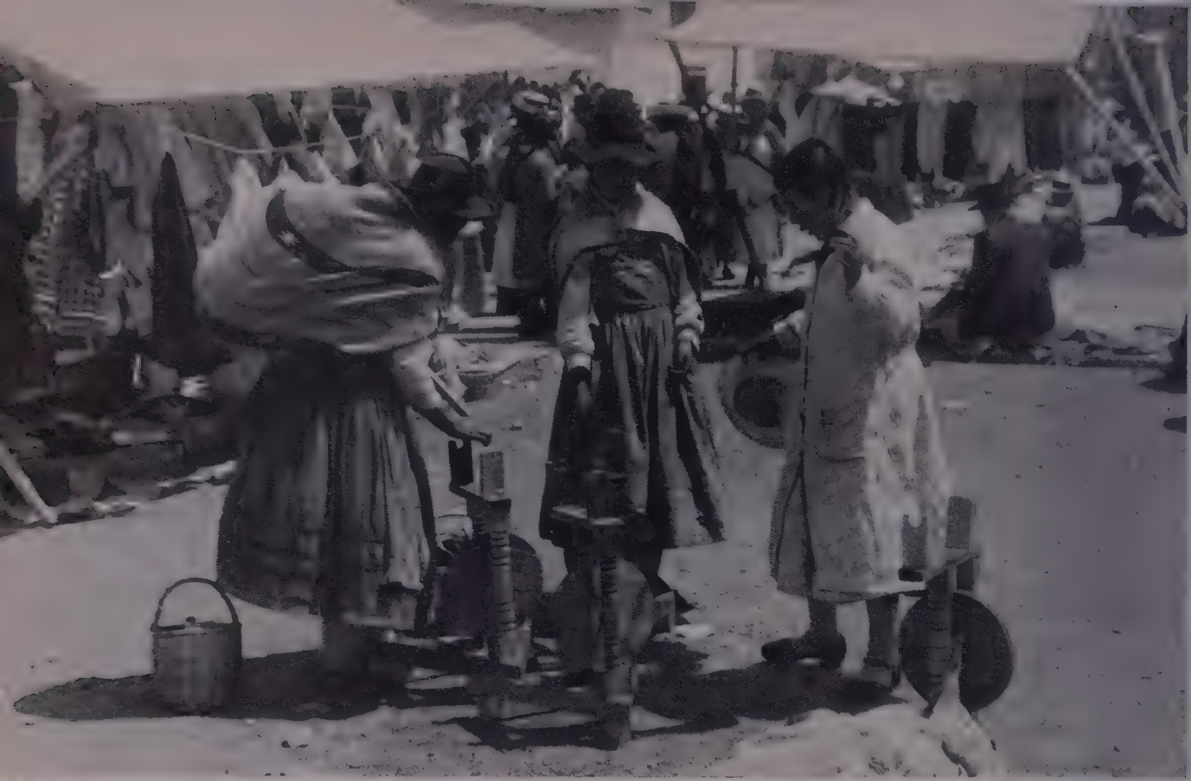

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(Above) *Huancayo, the largest town between Cuzco and Lima, has a market that caters for all needs. The Indian girls are examining spinning-machines; beyond are stalls piled with ready-made clothing which is beginning to oust the traditional dress.* (Below) *Many of the articles on sale are similar to those of Inca times: such are the wares of the old medicine-woman which include a flamingo, a remedy for fear*

es Harland

Sydney Har

With its tiled adobe houses and eucalyptus groves, this is typical of the villages in the Tarma valley descending eastwards from the Andean plateau towards the headwaters of the Amazon. On the mountainsides the Indians till the soil of terraces which are a legacy from the days of the Incas

support.

As an escape from their life of hardship and semi-starvation, the Indians often take to alcohol in the form of a very potent liquor called *aguardiente*, which is virtually fermented sugar. This is cheap and plentiful and, as a result, drunkards can be seen littering the streets on Saturday nights. Their other escape is coca, the leaf of which is chewed with lime to liberate the active principle, cocaine. This drug acts as a brain-stimulant, deadens the feeling of fatigue and may also anaesthetize the stomach, thus reducing the pangs of hunger.

Unfortunately these escape-methods aggravate the wretched condition of the Indians. On some farms, we were told, part of the wage is paid in liquor. This brings more profit to the farmer and allows the Indian to get his liquor cheaper. The only result of increasing wages is to lessen the amount of work done, since a man will only work until he has earned enough to get drunk.

But in spite of these discouraging obstacles, the Peruvian government is tackling the Indians' problems with energy. The agricultural expert told us that there was a great deal of ability latent in the Indians, witness their music and beautiful textiles; and he added: "For a people to live at these altitudes is amazing; for them to do it on a starvation diet is a miracle."

We wandered about the market for which Huancayo is famous. The street was lined with stalls where they were selling hand-woven textiles. There were crowds of gaily dressed women. In spite of their poverty, Indian women like a great deal of colour in their clothes and they all had bright woollen skirts and embroidered blouses. They wear about four or more skirts at a time, the theory being that you put a new skirt on top when you take off the inner one to wash it.

There was a great variety of foods in the market including many different types of potato, yellow, white and dark. Beside these there were other types of tuberous and farinaceous plants which are unknown in Europe. All these were domesticated by the Incas, who were skilful botanists. As well as the potato (evolved by them with the lupin and quinoa from native wild plants as a means of providing a staple diet at high altitudes there are the tomato, maize and a host of other food-crops, to the variety and excellence of which the Indians owe their relatively good health; for although starvation exists, malnutrition seemed uncommon. Most of the people we saw had very white teeth, and the children in the mining-camps, particularly, were remarkably healthy.

In the market some stalls were selling medicines which probably date from Inca times. Apart from charms and cures for fear, many are really effective. The Incas knew about quinine and were familiar with the anaesthetic properties of cocaine and many of their other remedies may be of pharmaceutical value. Together with their medical skills, the Incas recognized the physiological problems of high-altitude life. For example they enlisted special armies of mountain people to fight battles at high altitudes. Again, they practised a form of eugenics. Young nobles who could not pass stringent physical tests at high altitudes were barred from the ruling caste. These and other practices resulted in a race of people specially adapted to high-altitude life.

We discussed medical aspects of high-altitude life with Dr Helriegel who is head of the Cerro de Pasco company's hospital at Oroya. He told us that typhoid and malaria are very uncommon at high altitudes, and that most of the ill-health is due to respiratory diseases; bronchitis and pneumonia being quite common. But the most interesting facts we learnt concerned the incidence of cancer. Dr Helriegel said that he had never seen skin cancer in the Indians, and that other types of cancer were infrequent. Lung cancer had occurred among the foreign engineers, but never in the Indian population. The altitude itself had little effect on health, apart from the cases of mountain-sickness, or *soroche*.

We ourselves experienced mountain-sickness of a rather unusual kind. When driving up from Lima, all three of us were attacked by cramp, which began as a feeling of pins-and-needles in the fingers and ended as abdominal cramp—very unpleasant if you are in a truck as we were. Later we discovered that it had been due to over-breathing. Being medical students we had thought that the way to compensate for lack of oxygen was to breathe hard, but over-breathing results in the body losing too much carbon dioxide which alters its acidity. This leads to cramp.

When we arrived at 15,000 feet for the first time, we all felt somewhat wobbly. We went to bed, did not eat much, and slept very restlessly. The beating of my heart seemed to keep me awake. After a few days, however, we became acclimatized and life seemed the same as at sea-level except when we tried to climb. After the least exertion we panted and our hearts raced.

We were lucky. Many people suffer more serious forms of soroche, from which the sufferer may lose consciousness. Other symptoms are headache, indigestion and insomnia. All these symptoms are cured by a whiff of oxygen. In severe cases the heart is weakened and the patient must be given oxygen and sent down to sea-level immediately. Even the Indians had been known to develop soroche after living all their lives at nearly 16,000 feet. But on the whole they are much better adapted than the whites. The most popular game at Morococha was football which the miners played very energetically. Such a game would probably be fatal to an unacclimatized man.

The workers at the Institute of Andean Biology, it is true, were not certain that the Indian is racially better adapted to the altitude. The miners, however, declared that although the Indians were lazy the foreigner could not exert himself physically as much as the native. That the Indians may be especially adapted to the altitude is shown by the fact that they develop a form of downhill mountain-sickness when they go to the coast. In addition, their huge lungs and bronchi are very susceptible to tuberculosis in the bad conditions in which they have to live on the coast.

Fortunately for us, the 190 mice we caught did not develop downhill mountain-sickness when we brought them down to Lima. They also survived the journey to England where we are trying to breed them at Cambridge.

Mice are better than men for scientific experimentation, and we are hoping to find in them the answers to some of the questions to which the problem of life at high altitudes gives rise. We are hoping to breed them and to see if exposure to the increased incidence of cosmic rays has any deleterious effect on their offspring. Chemical examination of their blood may reveal chemical changes adapted to the more efficient transport of oxygen. Even if none of this work produces results, the fact that these mice have been separated from stocks of European mice for such a length of time makes them of great interest in pure genetics.

But in addition to their scientific interest, we are very grateful to the mice for an excuse to visit a country so fascinating and full of opportunity as Peru, and one which we are all looking forward to revisiting as soon as possible.

Corsica: Britain's Link with Ancient Crete?

by DOROTHY CARRINGTON

Readers of the author's article in our November 1955 number will be aware of the archaeological riches to be found in Sardinia; only last year, however, did excavation reveal the no less exciting evidence that in Corsica, more than 3500 years ago, a civilization existed which had cultural links with, on the one hand, Mycenae or Minoan Crete and, on the other, the Britain of Stonehenge

When the first photographs of the recent archaeological discoveries at Filitosa, in Corsica, appeared in the French press the public was incredulous. They showed large statues and fragments of statues, hewn from shafts of granite; human heads, their features sometimes carved with an almost brutal incisiveness, sometimes reduced to rudimentary indications, sometimes suggested in a manner as stylized as in the most disturbing of the works of Picasso. On their bodies, legless and armless like those of mummies, were realistic carvings of daggers and swords. Massive and elemental, they proclaimed an archaic but self-assured civilization. They recalled at once Easter Island and Stonehenge. Few people were ready to believe that they belonged to Corsica.

French archaeologists had hitherto formed but a poor estimate of the island. Although it is geographically placed at a cross-roads of Mediterranean cultural influences, and in spite of its proximity to Sardinia which has revealed the rich and vital civilization associated with the *nuraghi*, it was generally assumed that Corsica, mountainous and intractable, had remained throughout prehistoric times in a state of barbarous isolation.

These notions were convincingly contradicted when M. Roger Grosjean, representing the Centre National de la Recherche Scientifique, published his astonishing news this winter. There in Corsica, at Filitosa, near the south-west coast, he had excavated the ruins of a prehistoric fortress, a tumulus, with a platform for the cremation of the dead, and statues of those very dead, funeral monuments to the warrior-heroes of the tribe.

My own reaction was less one of surprise than of a sense of reward. I had been speculating on Filitosa for some seven years.

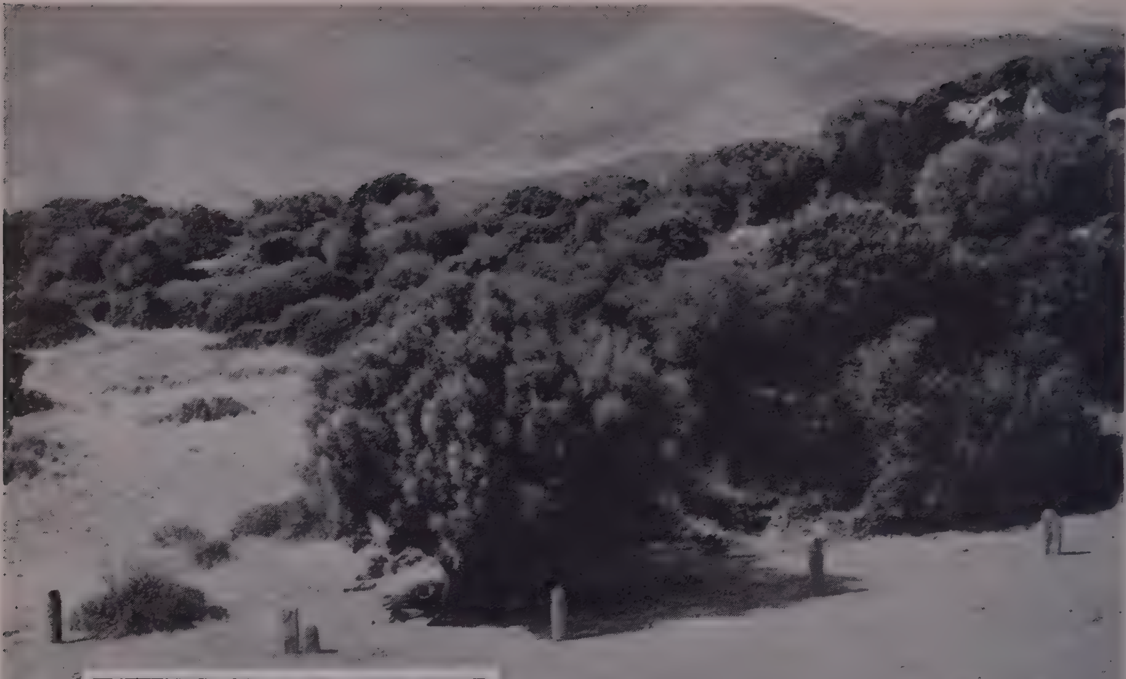
I first heard of this little village in 1947, when I made the acquaintance of a Corsican by the name of Jean Cesari, then working in London. Like all Corsicans out of Corsica he spoke nostalgically of his island. He spoke of his home in the remote south-western region; remote, because although only a couple of hours' drive from the capital it had remained primitive, little-visited, uncultivated, under-populated. But long ago, he told me, it must have been inhabited by a remarkable race of men. One could see their great stone monuments, dolmens and avenues of menhirs, rising out of the wastes of the *maquis*. And they had also, he assured me, left huge stone statues, statues of men, which now lay hidden in the maquis near Filitosa, known only to himself and to his cousin on whose property they lay. He conjured up the vision of a Corsica quite unlike that which the average traveller might imagine, of a land with elements of Brittany and Ireland, but more exotic than either. It was with these odd expectations that I went to stay with Jean Cesari and his family the following year.

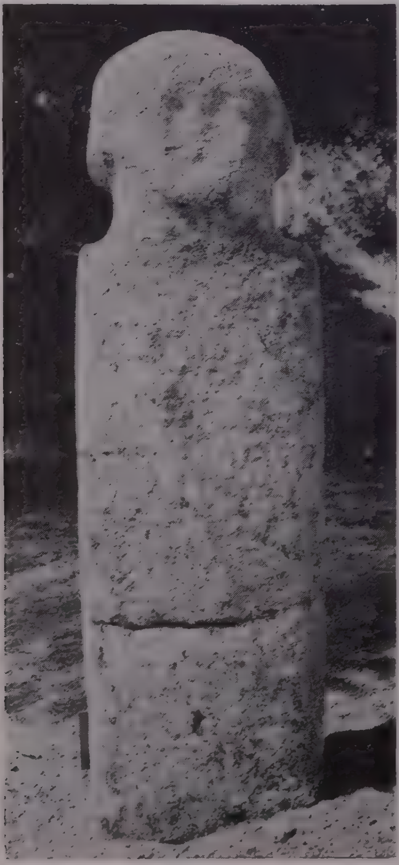
My wish to see the statues had been anticipated, and the day after my arrival, at dawn, we left by donkey-cart for Filitosa. The country, as I had been told, was wild and desolate. Enormous overgrown olives shaded the rocky slopes that fell from the shaggy mountains to the sea, and for many miles no buildings were to be seen except crumbling mediaeval watch-towers on deserted promontories.

Filitosa is less a village than a scattering of houses in the valley of the River Taravo. Here a handful of peasants live in almost biblical simplicity, farming the fertile land according to a traditional routine. Among them is Jean Cesari's cousin, Charles-Antoine Cesari.

He led us through the shimmering glades of ancient olives and over a little stream. The statues, which I had only half believed in, were lying before me on the ground.

The first I was shown happened to be a particularly impressive example of its kind. It was some eight feet long, lying on its back.





All photographs, except two, by H. Cohen, from Atlas Photo

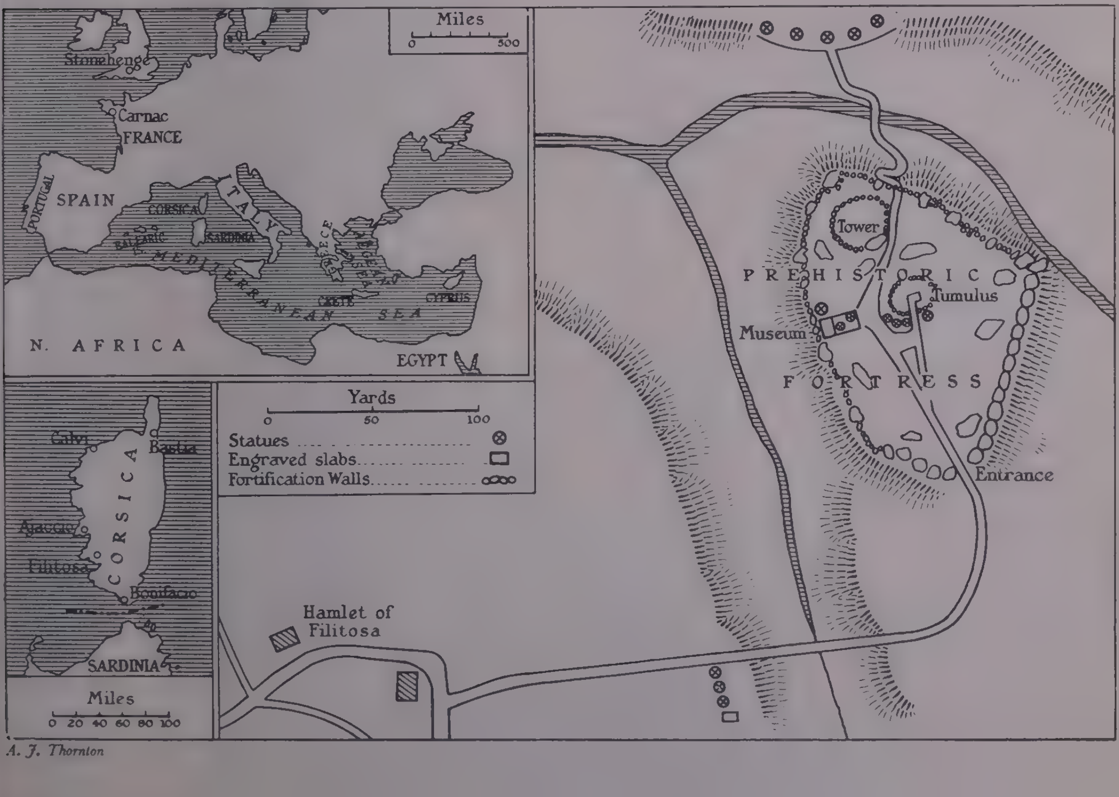
(Above) *Of the five statues that have been set upright in the valley below the prehistoric fortress near the Corsican hamlet of Filitosa, four were found by the author on her first visit. The huge olives behind them are said to have been planted by the Romans; although this is an exaggeration they certainly date back many centuries.* (Left) *The central statue of the group, found by the author lying on its back under an olive-tree, has a relatively realistic head, with eyes, mouth and nose carved in depth and an indication of ears. A sword in relief can be distinguished running diagonally from the right shoulder across the body. The horizontal cut near the base represents an attempt, made in modern times, to cut the statue up for building purposes, a fate which several of the Corsican statue-menhirs have unfortunately suffered: part of a statue was found forming the lintel of the door of a ruined house near the tumulus. The house, now being repaired, will serve as a museum for the various small objects, such as grindstones, which have been found on the site*

Its large round head showed distinct facial features: eyes, close-set and sinister-looking, a discernible mouth and nose. The shoulders and neck were well formed; and a sword, carved in relief, could be seen running diagonally across the shaft of the body. Three others lay nearby. Two of them, on close examination, were found to bear sculptures of daggers on the upper parts of their bodies. The fourth was a cruder work, but recognizably human in form. They were known locally, I was told, as the "*paladini*"—paladins, or knights of Charlemagne. And warriors they without doubt represented, though not of the Middle Ages but of some more obscure antiquity.

During my stay on the island I learned that other statues, somewhat similar, had already been found there. Prosper Mérimée, better known as the author of *Colomba*, the dramatic tale of a vendetta, had made the first official archaeological survey of Corsica in 1839. He had located numerous dolmens and menhirs, and a curious statue, to the north of Ajaccio, which he had hesitated between classing as Roman or "African". This somewhat resembles those of Filitosa, though it carries no arms and the indication of breasts suggests that it was intended as a woman. During the 19th century and since various visiting archaeologists had added to his list of finds: dolmens and menhirs, and a number of statues of the same type, scattered about the north-west and south-west and centre. Twelve in all were known in 1948, apart from those I had seen at Filitosa, but they had aroused little interest or curiosity.

This indifference was the more surprising in view of their obvious originality. Such statues are no longer regarded as Roman or Phoenician, but are known to belong to a type of prehistoric art which appears in the epoch that extends from the beginning of the Bronze Age to the Graeco-Roman era. Examples belonging to widely differing periods have been found over a vast area: in Guernsey (the two statues known as Castel and Saint Martin), in Portugal, continental France, northern Italy, the Sudan and as far afield as Ethiopia and the Caucasus. They are described as statue-menhirs and are considered to be funeral monuments, commemorating chieftains, heroes or tribal matriarchs.

The Corsican statue-menhirs are exceptional. Nearly all those in continental France and elsewhere are triangular or tapering blocks of stone in which the facial features are set, often without regard for symmetry, as though in a shapeless mound of flesh, without any indication of the form of head or face or neck. The Corsican statues, on the other hand, show a much greater mastery of pro-



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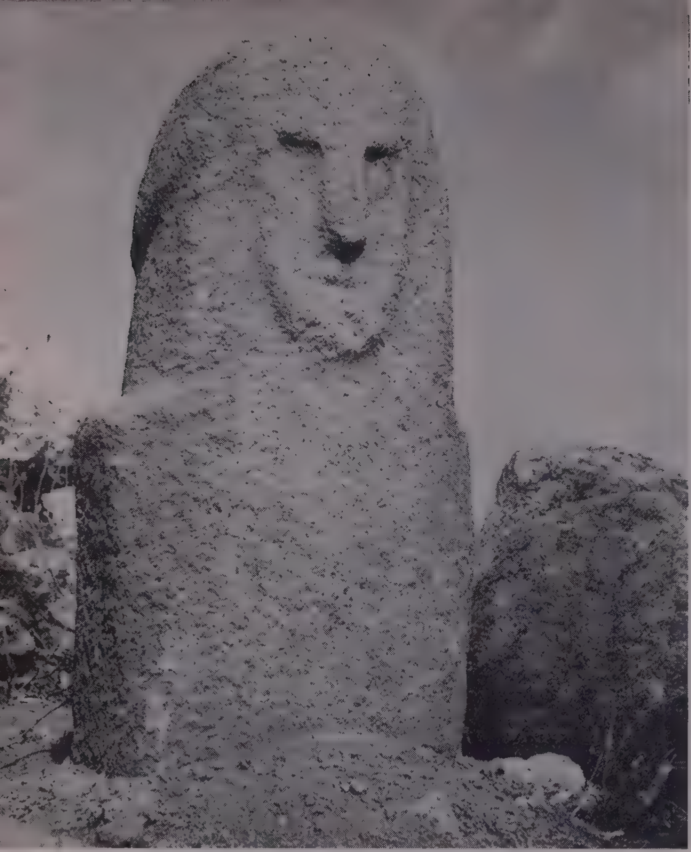
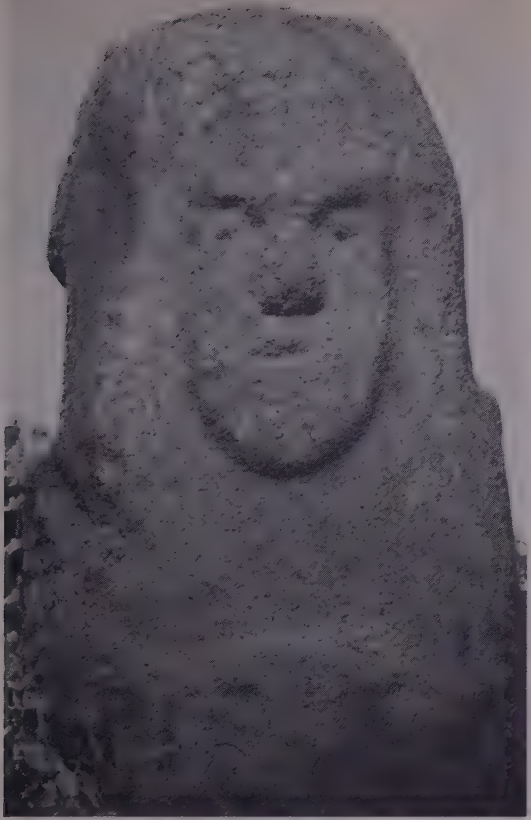


(Left) *This is the most impressive of the statue-menhirs of Filitosa and possibly the finest of its kind yet known. It was discovered broken in half and buried near the tumulus. It carries no sculptured arms and the serene, severe physiognomy suggests a high-priest or judge rather than a warrior.* (Below) *The interior of the fortress is a plateau now cleared of all the dense vegetation that covered it except for the olives. Fragments of menhirs and statue-menhirs have been erected on the spots where they were found. The magnificent head shown above now stands as an intimidating guardian of the place of cremation found beneath the tumulus.* (Opposite, top) *In striking contrast is a statue which, with its coarse, aggressive countenance, seems to be the portrait of a famous warrior, some Tamerlane of prehistoric times. The massive handle of a sword appears at its base. Continuations of the sword have been found on two lower fragments.* (Opposite, bottom) *With close-set, deeply hollowed eyes and a flat-topped head this statue looks bird-like and mysterious. But it evidently represents a warrior, for the top of a sword, slung around the neck and hanging vertically, can be seen on the body*



T. Tomasi

portion and form. The heads are nearly always three-dimensional; the contour of neck and shoulders is respected, while the facial features, and sometimes other elements of anatomy, such as spine, ribs and shoulder-blades (though never arms or legs), are delineated in a relatively realistic way. They are evidence of an energetic and artistic prehistoric culture. The four I had seen at Filitosa are among the finest, and nowhere else on the island had such statues been found so closely grouped together. The idea that Filitosa might be the centre of this unknown civilization haunted my imagination.

When M. Grosjean arrived in Corsica he at once appreciated the significance of these statues. Together we visited Filitosa. Here he made further discoveries. One immense slab of stone, some nine feet long, which had always been used by the Cesari family as a seat, turned out to be a particularly imposing statue-menhir, its face indicated in a highly stylized manner by two Vs, placed one above the other, and displaying on its body the distinct sculptures in relief of a vertical sword and a dagger in its sheath. Other statues, and various dolmens and menhirs, were found in the lower reaches of the valley.

The existence of this assemblage of statue-menhirs and megalithic monuments suggested that the relics of an inhabited prehistoric centre might well be found in the vicinity. But the discovery came unexpectedly, after defying organized searches. M. Grosjean was on the point of leaving Filitosa when Charles-Antoine Cesari casually remarked that he had missed seeing an old ruined monastery on his property. Although a mediaeval ruin was of no interest to him as a prehistorian, M. Grosjean nevertheless filled in his last afternoon visiting it.

The so-called monastery stood on a rocky eminence, within sight of the five statue-menhirs. The gigantic superimposed blocks of granite that appeared through the jungle-growth of vegetation had certainly not been raised by any builder in historic times. They seemed to belong to prehistoric fortifications, crowning the hill.

In the following summer of 1956 the excavations began. The first and apparently endless task was to cut and burn away the forest of olives, mountain oak and dense undergrowth. But in less than two months the main features of the site were visible: the fragments of an encircling wall of fortifica-

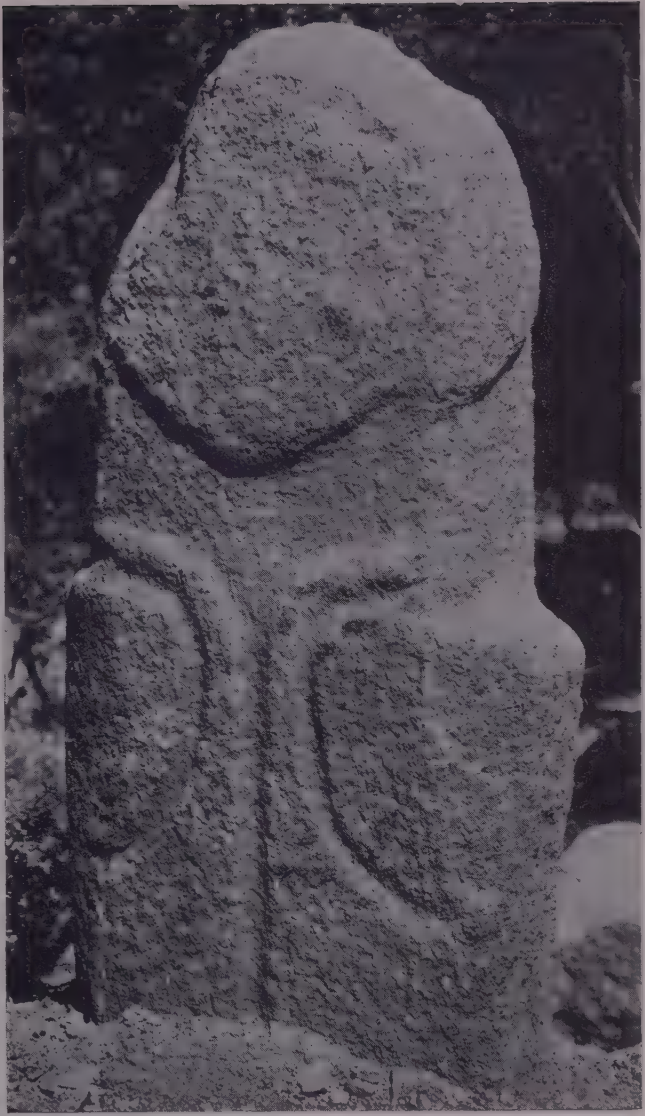
Although the face of this statue is rudimentary, its back, shown here, has been carved with care; the stylized representation of ribs and spine forms twelve neat rectangles

tion, with a tower commanding the valley, and in the centre of the fortress a tumulus. The excavation of this tumulus yielded unhoped-for revelations. Below the covering of stones appeared layers of ashes and broken pottery, and below these a slab of burnt clay, rather over a yard square, mounted on a four-foot-high stone wall. It was the platform on which the prehistoric inhabitants of Filitosa had cremated their dead.

In and near the tumulus statues of these dead were brought to light; broken in half, but with their heads, fortunately, intact. One after another these long-hidden faces were exposed in the brilliant Mediterranean sun which threw into relief the strong chiselling of their features. Each statue had its individual character. One was disconcertingly bird-like, with eye-holes placed close together in a flat-topped, owl-like head; another, with an unformed face, had a carefully carved back divided into twelve neat rectangles by the stylized delineation of ribs and spine. Two of the heads were magnificent: one, heavy and barbaric, with coarse spreading nose and glowering eyebrows, seemed the portrait of some ferocious warrior. Another, a masterpiece of its kind, had something noble and lofty in its expression, with its oval face, long straight nose and level, elongated eyes. Fifteen statues in all have been found in and near Filitosa. Placed upright, rising out of the rocks and maquis like an army of stone ghosts, they stupefied the first visitors to the site. Nothing quite like them had been seen before.

The dates that may be applied to the site are as yet only approximate. Statue-menhirs of the most archaic type, roughly hewn blocks of granite in which the sculptor has groped clumsily towards the human form, have been found in the valley of the Taravo, and elsewhere in Corsica, close to dolmens and menhirs. It is considered that the megalithic civilization of the dolmens and menhirs came to Europe from the Near East to establish itself in the western Mediterranean during the third millennium, before moving north to reach Brittany and Britain some hundred years later. The oldest of the statues of Filitosa may therefore belong to the last period that saw the elevation of megalithic monuments in Corsica, that is to say about 2000 B.C. The representations of various types of daggers and swords, analogous to Bronze-Age weapons found elsewhere in the Mediterranean, confirm that the armed statues belong to the first half of the second millennium. Another date is indicated by the circular defence-tower of Filitosa. Its construction exactly corresponds with that of the oldest of the nuraghi, the majestic prehistoric fortresses of Sardinia, the earliest of which are dated at 1500 to 1400 B.C. It may therefore be considered that the civilization of Filitosa lasted some few hundred years, between 2000 and 1400 B.C. M. Grosjean has put forward the theory that the creators of the statues were superseded, around 1500 or 1400 B.C., by a race of master-builders, the builders of the tower, who, uninterested in the art of sculpture, broke up the statues to incorporate them in their constructions.

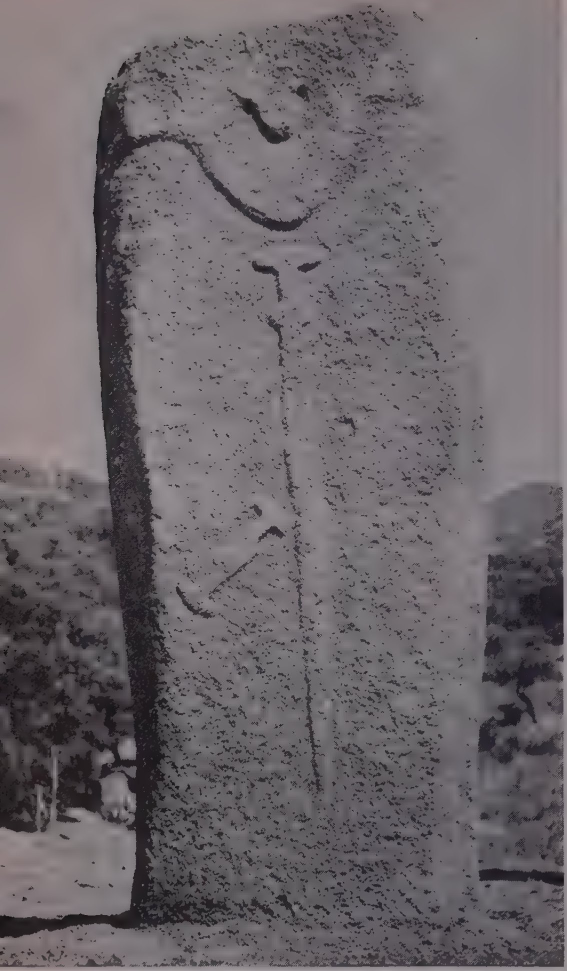
Until the discovery of the tower of Filitosa evidence of prehistoric relations between Corsica and Sardinia, less than eight miles from its southern coast, was disappointingly lacking. But now a new discovery, unspectacular in appearance, but perhaps the most significant of any made in the valley of the Taravo, gives proof of cultural links between the two islands. Near Filitosa, in the walls of a house, M. Grosjean found two large blocks of stone, clearly of prehistoric origin, carved with representations of bulls' horns with balls at their tips.



The base of the skull, shoulder-blades and spine at the back of a statue. The harmonious symmetry of the lines reveals more concern for artistic design than for realism

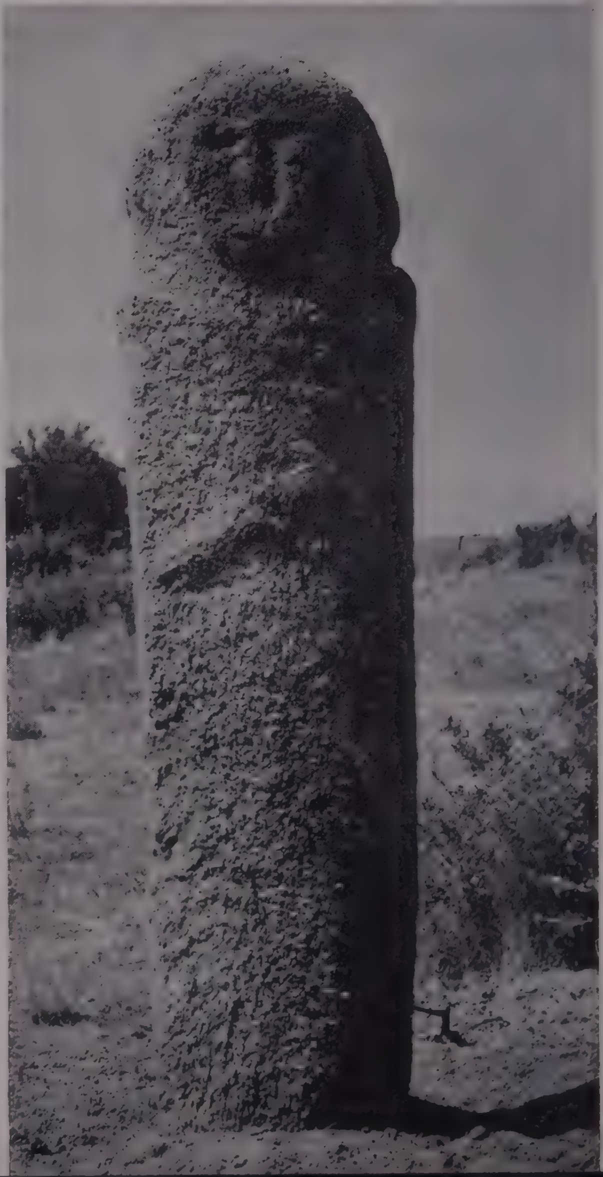
This is a prehistoric symbol of extremely far-reaching connections. The cult of the bull existed in Egypt, perhaps prior to the first dynasty, in pre-Vedic India and in Chaldea. It took root in Minoan Crete, from whence it spread to Cyprus, the Aegean islands and Mycenaean Greece. It reached north Africa, travelled westwards to the Balearic Islands and Spain, and was implanted in Sardinia, which is on the direct maritime route between Spain and the Aegean. Bulls' horns and bulls' heads are recurrent motives in Sardinian prehistoric art. Sculptures of stylized bulls' heads can be seen on the walls of the artificial burial caves of Anghelu Ruju; innumerable warriors portrayed in the bronze statuettes of the builders of the nuraghi wear horned helmets, while bulls' heads form the prows of bronze ships designed as votive offerings.

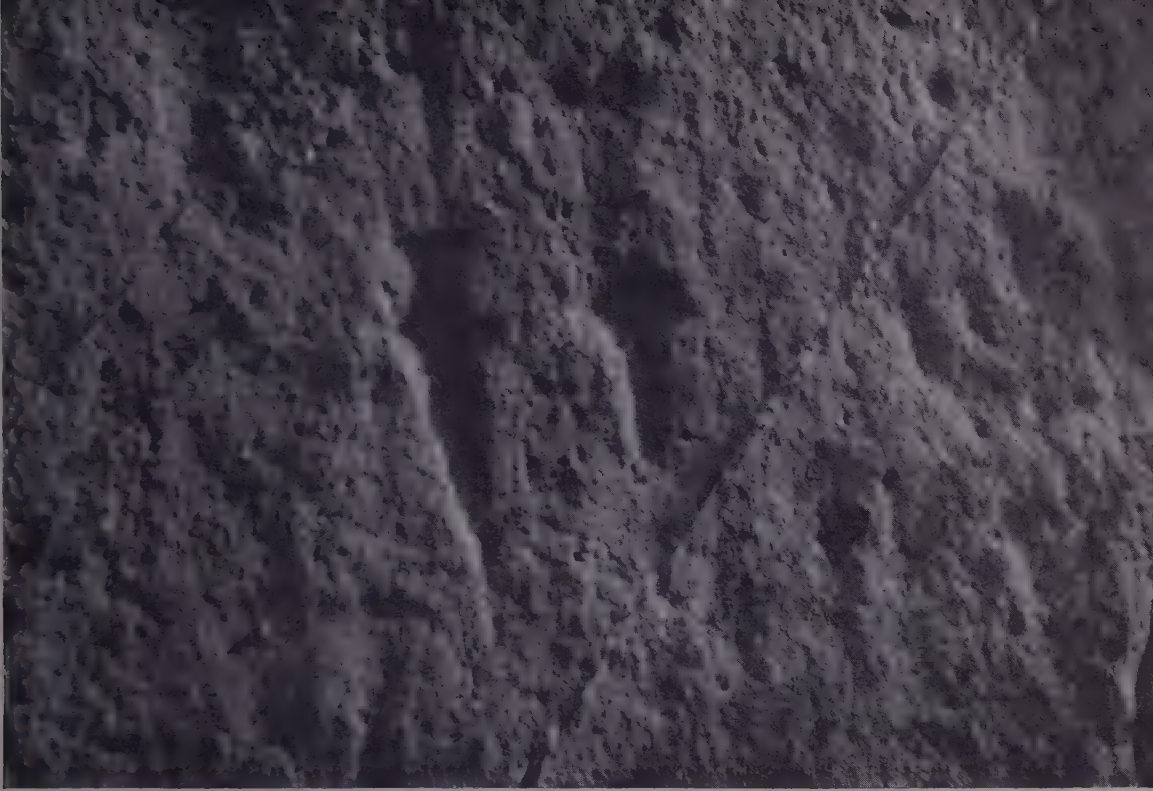
The significance of the balls on the tips of the bulls' horns is obscure, but the symbol, if uncommon, is none the less found over a very wide area. The oldest known representations are on a royal Cretan seal, and in certain hieroglyphics of Cnossos. The motive appears fairly frequently in Sardinian nuraghic art, as in the bronze statuette of a bull found at



(Below) *This fine statue, over seven feet high, was one of the first four discovered by the author in the valley below the fortress. Though the sculpture is weather-worn, its features are clearly distinguishable. The realistic face is oval in form with well-carved chin, eyes, nose and ears. An unsheathed dagger with pommel and guard is carved on the upper part of the body. On the back of the statue are carved the base of the skull, shoulder-blades and spine*

(Above) *An imposing statue-menhir, some nine feet high, which was found by M. Grosjean, the French archaeologist, lying under a hedge near the road that passes through Filitosa. It had long been used as a seat by the villagers. As it was lying on its face the sculpture has been remarkably well preserved. The head is delineated in a simple archaic manner by two Vs, the upper representing the nose and eyes, the lower the outline of face, chin and ears. In contrast, the sword and dagger are surprisingly realistic. The dagger is shown in its sheath, terminating in a crescent form which repeats that of the pommel. On the back of the statue, unnoticed by any of the villagers who had sat on it, are the outline of shoulder-blades and spine*





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A carving of a similar dagger, apparently of Mycenaean type, was discovered in 1953 at Stonehenge by Mr R. J. C. Atkinson. To the right is one of a British-type axe-head noticed at the same time

Perfugas and the helmets of certain statuettes of warriors. The memory of the symbol is preserved to this day in Sardinian popular festivals, when oxen are paraded drawing flower-decked wagons with oranges on the tips of their horns.

The symbol passed to France with the megalithic civilization, where it survived into the late Iron Age. In Britain it may have attained its most spectacular expression. According to M. Grosjean's interpretation the famous stone circle which encloses a large part of the village of Avebury may have been designed to form the gigantic outline of the head of a bull, while two avenues of sarsens leading across the downs, terminating in circles, represent horns with balls at their tips.

The discovery of these unostentatious carvings on the walls of a peasant's house has finally destroyed the legend of Corsica's prehistoric isolation. The island is shown to have been linked, by the use of an identical symbol, with Sardinia and the Levant to the south and east, with continental France, and perhaps with Britain to the north. Corsica thus appears as one of the stepping-stones by which a prehistoric civilization came to Britain from the eastern Mediterranean and Ancient Crete. In this connection it is relevant to recall the carving of a dagger of Mycenaean type recently observed by Mr R. J. C. Atkinson on one of the triliths of Stonehenge.

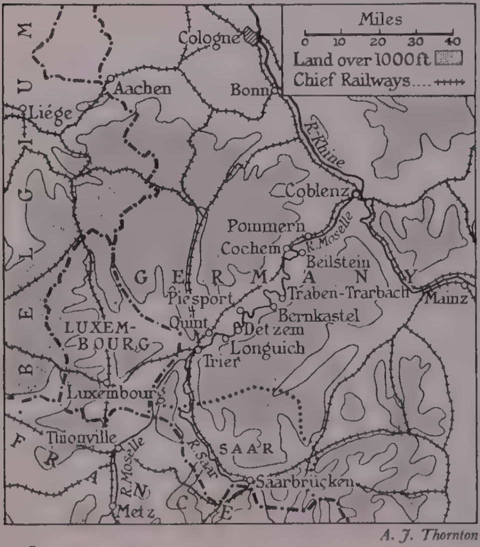
It was a civilization of extraordinary vitality, as widespread in its time as the Roman Empire or mediaeval Christianity. It was at once warlike and religious, deeply preoccupied with the mysteries of death and immortality. It possessed the high degree of social organization necessary to raise such monuments as Carnac, Avebury and Stonehenge in the absence of mechanical technique. In certain countries and periods it produced outstanding works of art. Up till now it has been supposed that in Corsica, where in historic times the artistic movements of Europe have left but a meagre imprint, this civilization would have taken a crude and barbarous form. The discoveries of Filitosa prove that on the contrary it evolved a bold and original culture in the hands of the gifted sculptors of the valley of the Taravo.

The Moselle Wine-Garden

by JOHN MARSHALL

In the course of last year's negotiations between France and the German Federal Republic over the Saar settlement, an agreement in principle was reached on the long-discussed canalization of the Moselle, which is to be straightened, deepened and widened from Thionville to Coblenz, to allow the passage of vessels up to 1500 tons. This would bring great advantage to the Lorraine industrial area around Metz, through which the river flows on its northward course through France from the Vosges to the Luxembourg frontier.

But the River Moselle changes its character altogether when it swings north-east along the Luxembourg frontier and enters German territory, becoming the Mosel (pronounced with accent on the first syllable). As it worms its way in fantastic loops through the Rhenish slate mountain-block towards the Rhine, it forms one of the most picturesque, interesting and unspoiled river-valley areas in Europe: the 120 serpentine miles of wine-growing Mosel-land, with some seventy old-fashioned wine-villages and small towns, that lie between Trier and Coblenz. The canalization, when completed, may have comparatively little effect on the economy of this part of the valley, though it is thought locally that it will bring considerable benefits in the form of flood-control to villages that regard occasional inundations as inevitable. It remains to be seen what other changes will be brought to this region whose peaceful and unspoiled character has depended largely on the fact that previous generations found the narrow meandering valley unsuited for great railways, arterial highways or even modest through river-traffic.

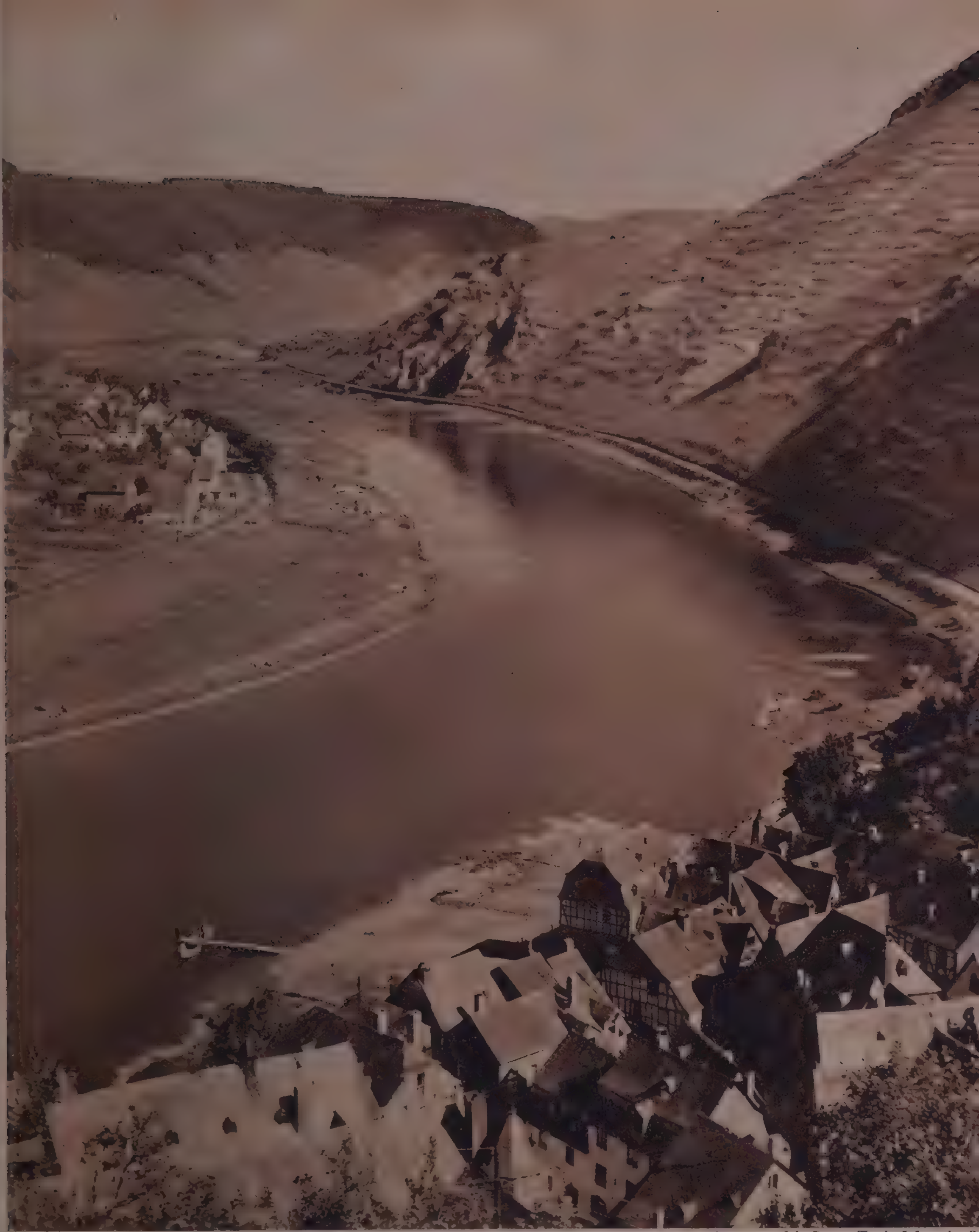


A. J. Thornton

From Trier to Coblenz the valley forms, as it were, one gigantic wine-garden. Its economy depends upon the wine industry, together with the secondary industry of tourism which is so closely bound up with it. Not a patch of soil that can be profitably used for the vine goes to any other purpose. (So much so that, for instance, the village of Piesport has its churchyard on the opposite side of the river, where the soil can be better spared!) The villages and small towns themselves have the air of being thriftily squeezed into the odd parcels of land unsuitable for the vine, or into the shelf of flood-soil between the hill-terraces and the river.

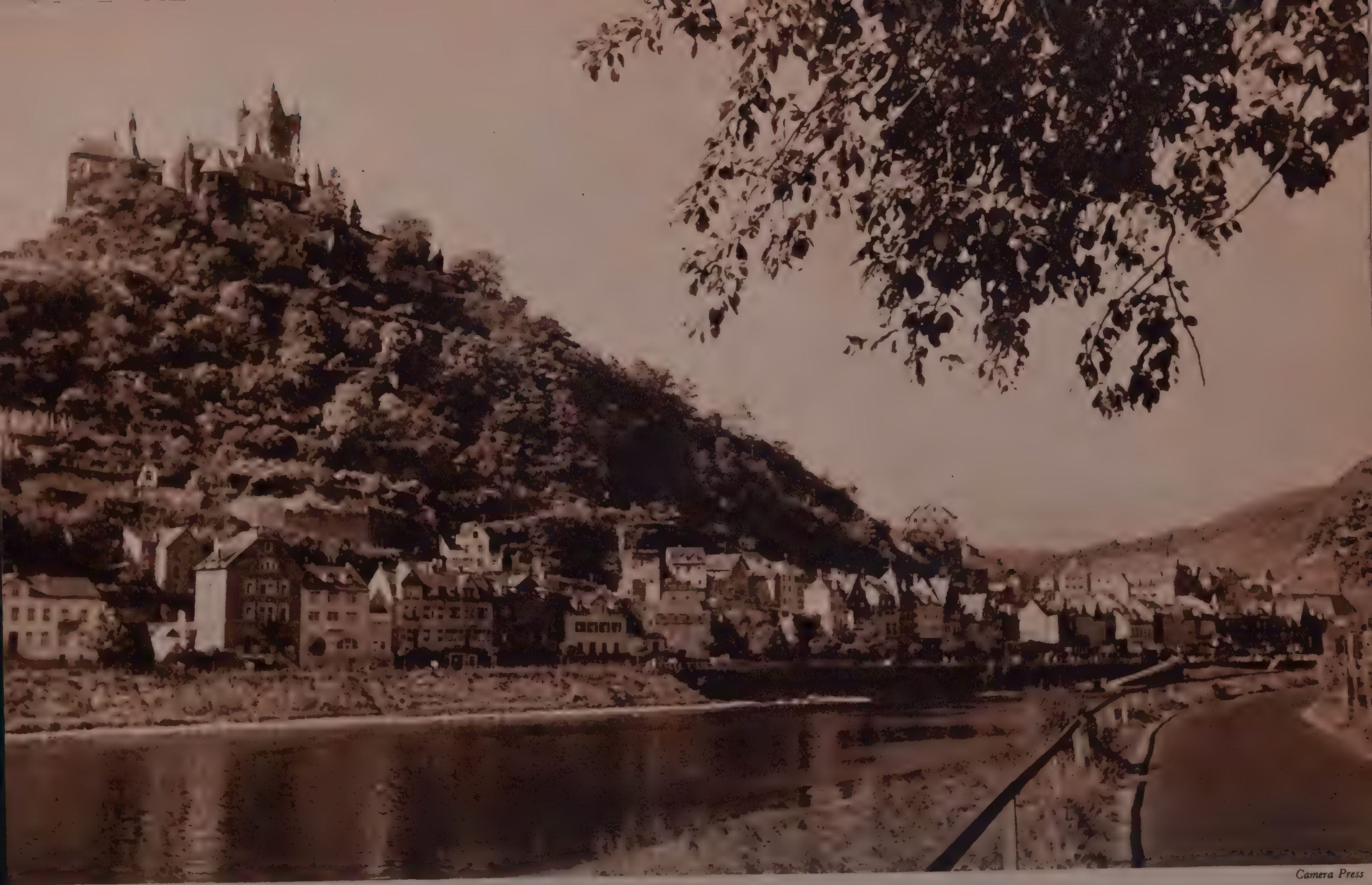
Most of the villages are of great antiquity. Some of their names point back to unbroken continuity of settlement since Roman times when the Moselle valley road linked the imperial seat at Trier with the frontier fort and settlement of Coblenz: Quint is derived from the fifth mile-post of the road (*ad quintum lapidem*), Detzem from the tenth (*decimum*), Longuich appears to have been one of the first of the straggly villages (*longus vicus*), Pommern probably then as now had orchard gardens (*pommaria*). Except in Trier itself, no buildings of Roman date remain; yet on the whole the villages have an old-world look, their characteristic shape and their kernel of public buildings dating substantially from the 14th to the 18th centuries when the Elector Prince-Archbishops of Trier developed this realm. The Romans introduced the vine to the valley and it has been associated with intensive viticulture ever since.

The German wine-growing areas form the most northerly boundary of the wine-industry. That fact brings with it handicap, but also advantage. The handicap is implied in the vine-growers' saying that wine needs thirteen months of sun in the year; climatic risks—poor sunless years, excessive rain or cold, premature winter frosts or the even more devastating belated spring frosts—bear much more heavily on the *Winzer* of Moselle and Rhine than on growers further south. To compen-



By courtesy of the German Tourist Information B

The River Moselle at Beilstein. In its course from Trier to its junction with the Rhine at Coblenz the Moselle winds its way tortuously through the Rhenish slate mountains whose steep unpromising slopes produce the vines that are the Moselaners' main livelihood. The twistings of the river themselves help in this for they make it possible to grow first-quality grapes on both banks in sheltered positions where they are protected from the cold winds. Wine-making has been carried on in the valley since Roman times; indeed a Roman poet sang the praises of the Moselle and its grapes seventeen centuries ago

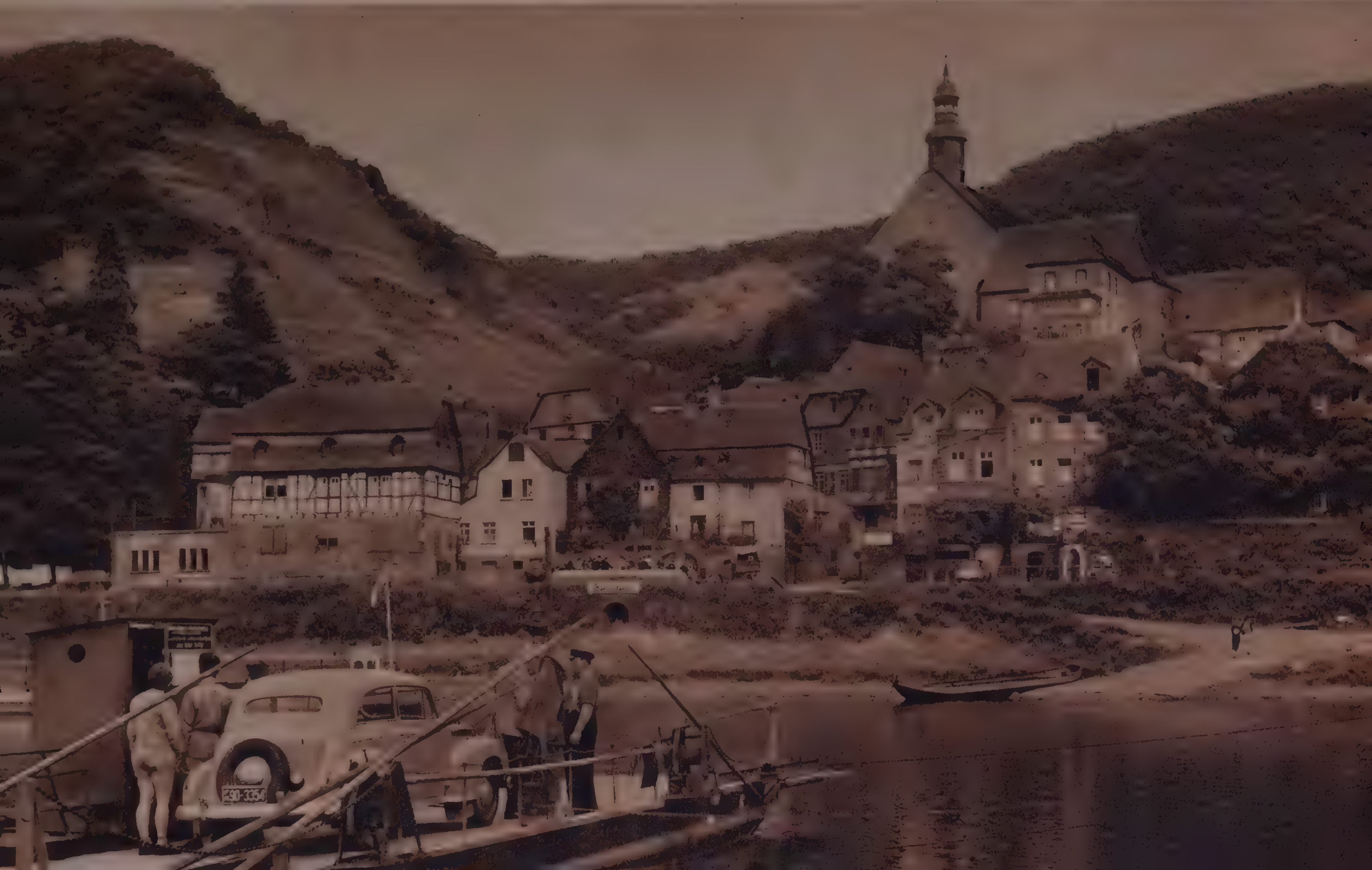


Camera Press

Cochem, in the lower reaches of the Moselle, is one of the most attractive of the little towns along the valley. Its castle, given by King Adolf of Nassau in pledge to the Prince-Archbishops of Trier in 1294, was destroyed by the French in the 17th century and romantically rebuilt in the 19th

Bridges over the Moselle are fairly few and far between and local people who cross the river do so by one of the many hand-operated cable ferries which shuttle to and fro all day long. This one is at Beilstein which nestles beneath the rocks and the slatey slopes terraced for vine-growing

John Marshall



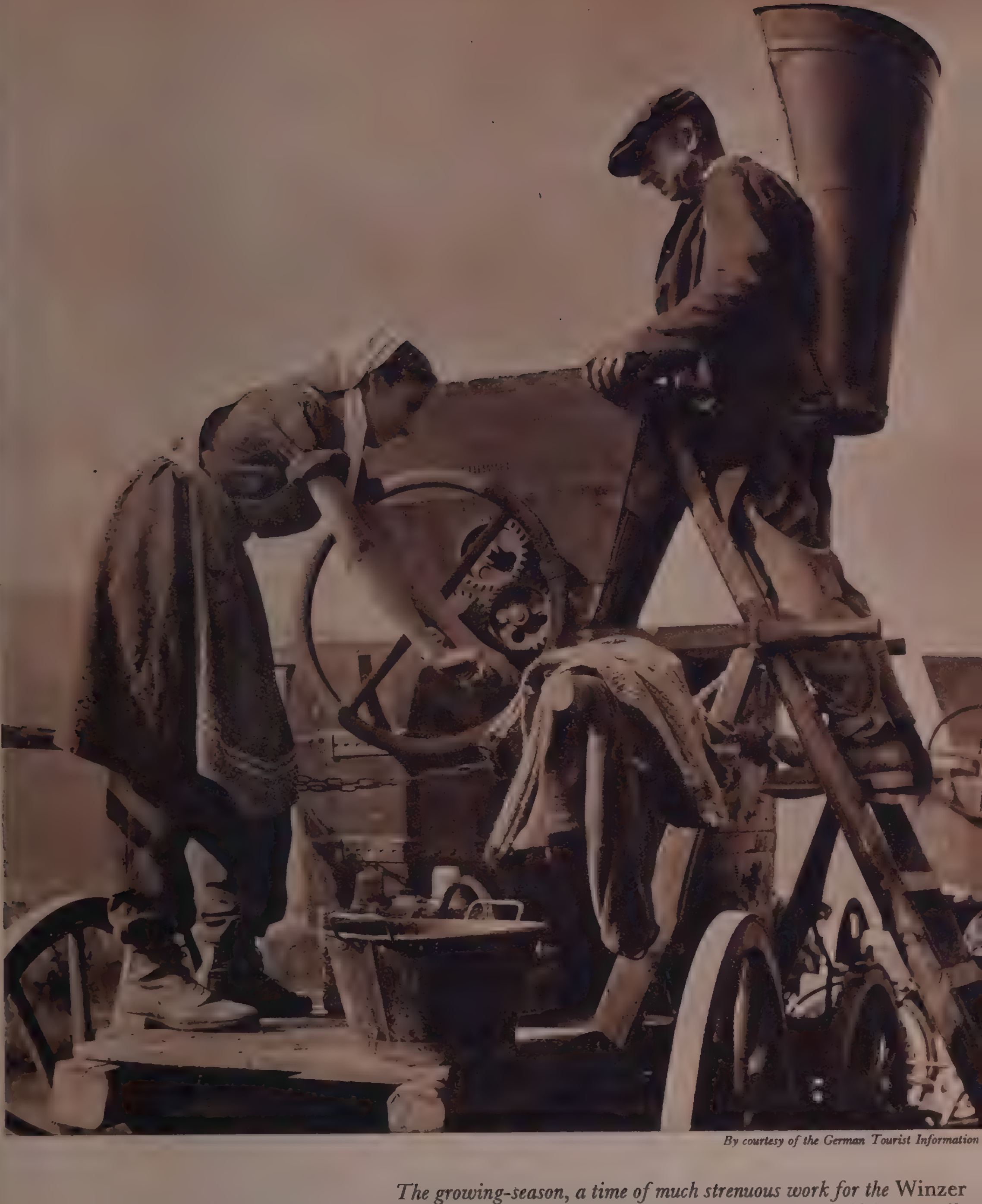
The market-square and half-timbered houses of Bernkastel. Upstream from Cochem and Beilstein, it is perhaps the most celebrated of the little Moselle wine-towns, its vines producing some of the valley's finest wines, among them the famous Bernkastler Doktor. The second most important industry of the Moselle is tourism and it is easy to see that in such pleasant surroundings the local product can be sampled to perfection

ohn Marshall

By courtesy of the Rhine and Moselle Wine Shippers Ass

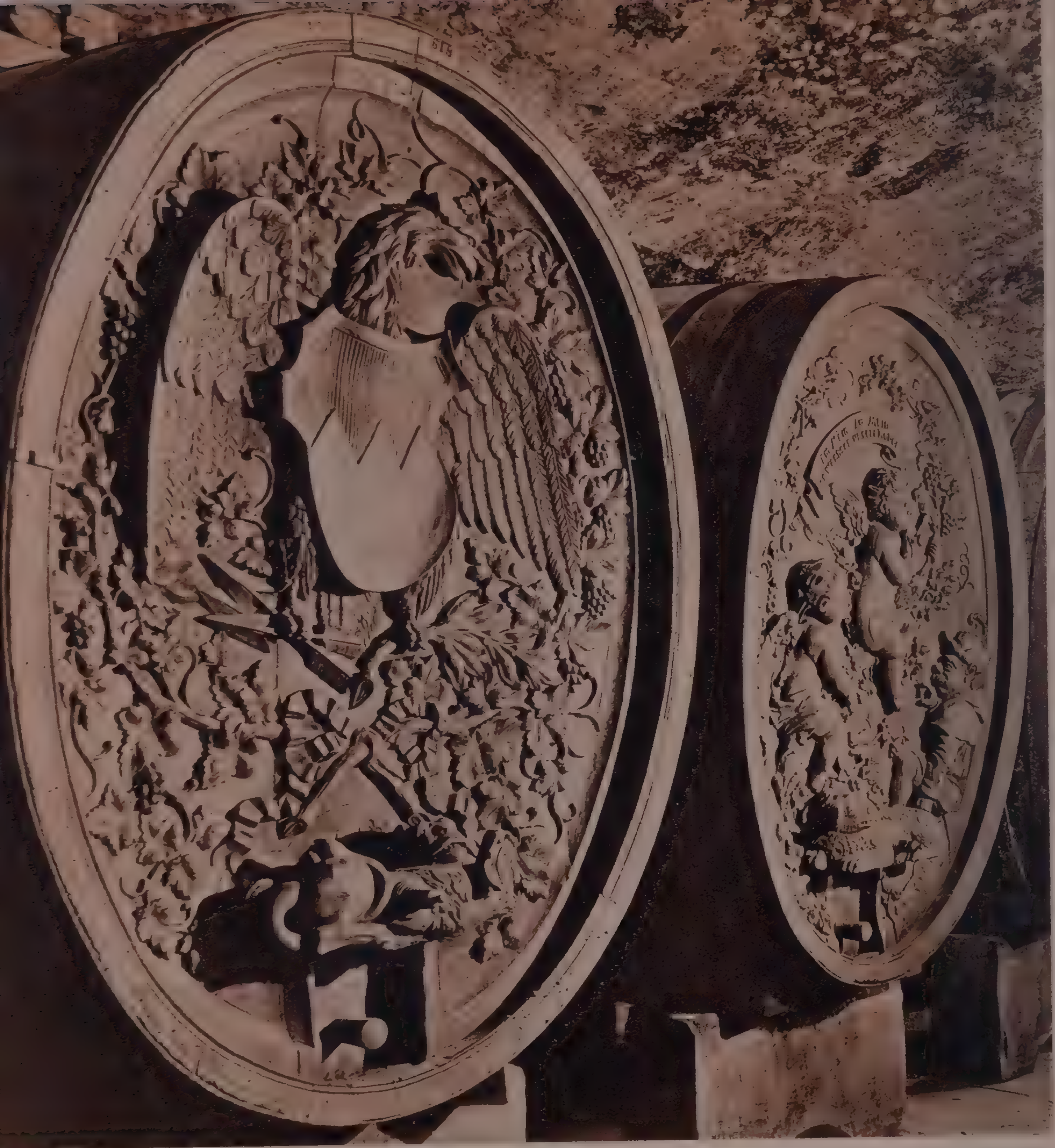
Few of the wine-estates are very extensive or even medium-sized: by far the majority are small-holdings of not more than an acre or two operated by the owner and his family. Apart from the normal requirements of good husbandry, the Moselle wines depend for their superlative quality on the meticulous care that is taken in the harvesting and pressing of the grapes

courtesy of the German Tourist Information Bureau



By courtesy of the German Tourist Information

The growing-season, a time of much strenuous work for the Winzer *of the Moselle valley, culminates in the harvest which normally takes place in October. Grapes are picked and placed in large, unwieldy metal containers, carried on the shoulders of the pickers who then bring them down the steep slopes to the road below where mobile crushers and great wooden tubs wait to receive them*



Courtesy of the Rhine and Moselle Wine Shippers Association

The cellars of the Moselle wine-growers are always underground to ensure the cool even temperature essential to the correct fermentation of the wines. Each pressing is kept separately in casks that are sometimes old and splendidly carved with coats-of-arms or allegorical scenes related to wine-growing sate—or, in the eyes of the connoisseur, more than compensate—these northern wines can have a superlative quality, delicacy and bouquet that are unknown to products of the sun-drenched southern lands.

The quality of the wine seems to be determined to some degree by the strain of grape from which it is made. Even more it is influenced by the make-up of the soil on which it is grown, the situation and exposure to the sun of the vineyard, and of course the care and attention it receives from the husbandman. Thanks to the meanderings of the Moselle, many of the loops in the famed "Mittel-Mosel" stretch in the Bernkastel and Traben-Trarbach areas form sun-traps, from which the deadly north or east winds are fairly excluded; and the local slate soil seems to have the special property of holding the warmth of the sun.

The slopes are generally very steep; and the rough, rocky, slaty ground seems incredibly poor: harsh, flinty stuff made up of broken-down fragments of the grey slate which is the substance of these hills, and which also is the recurrent theme in the building-materials of the valley. The fact remains that this unpromising soil has for centuries been enabled to produce not merely ordinary table-wines, but a predominance of aristocratic "fine" wines, thanks to the skill, enthusiasm and unremitting hard work of the growers and their labourers. They till and hoe the terraces; they carry manure to them up slopes that seem unclimbable to the onlooker (hence the saying that the vines are fed as much by the sweat of the Winzer as by manure); they attend meticulously to the various stages of pruning and budding of the vines; and during the height of the growing-season they have the never-ending task of dragging hoses and sprays up the mercilessly baking-hot hillsides to combat insect and fungus pests. Then, the Winzer's day in the vineyard (and the Winzerin's too, for women share much of this work) begins about 6 a.m., so as to have the advantage of the cooler morning hours.

Spraying involves a considerable amount of transport; for many vineyards are on the opposite bank of the river from the villages where their owners and managers live. Local cross-river transport is achieved by the vehicular ferries that ply busily to and fro on a cable. These are very characteristic of this landscape where, as I have said, there is virtually no through river-traffic. On the ferries can be seen the typical Continental-style agricultural waggon, usually pulled by an ox-team, bearing the cask of spray, stained blue with copper sulphate, and the pumps and hoses. In recent years more and more diesel tractors have been coming to replace the ox-team; no-one, however, is prepared to say that the loss of the natural manures which would result from a large-scale conversion to diesel transport would not be detrimental to the quality of the wines.

The time of greatest bustle and activity in the year is, of course, the vine-harvest in October and even November. Many additional workers augment the regular labour-force, including townsfolk who like a working holiday in the vineyards and wish to indulge simultaneously in a "grape-juice cure".

At harvest-time is observed the distinguishing feature of Moselle and Rhine wine-making: the greatly prized individuality of the wines is purchased at the cost of a high level of application of skilled labour in the harvesting and pressing of the grapes. The practices that make this individuality possible can be observed at harvest-time. Each vineyard's grapes are kept to themselves and pressed separately—indeed the picking of one day is often kept apart from the picking of the next day in the same vineyard—and specially ripe individual grapes are sometimes picked separately instead of being picked in bunches. Such careful harvesting produces wines of particular quality and character and is a distinguishing feature of Moselle and Rhine wine-making.

Likewise each pressing is kept in its own individual cask, as "green wine", in the cool, deep underground cellars which may lie feet below the very bed of the river, until it has finished its slow fermentation and is judged ready for bottling, usually from six to twelve months according to its development.

The Moselle valley depends on the wine; the wine, as I mentioned earlier, depends largely on the weather. At present the Moselle and Rhine growers are facing something of an economic crisis. There has not been a really good wine-year since 1953. 1954 was poor, 1955 indifferent and the late spring frosts of 1956 not merely destroyed in advance the prospects of a reasonable harvest (production was estimated as about one-third of the normal) but even destroyed for good a considerable number of the actual vines. Although the *Moselaner* may keep up their usual cheerful, hospitable and good-humoured attitude to the world about them, their inward anxiety and hope is for two or three consecutive good years to restore the stocks on which their livelihood is founded.

India: The Strange Vineyard

by FRANCIS WATSON, O.B.E.

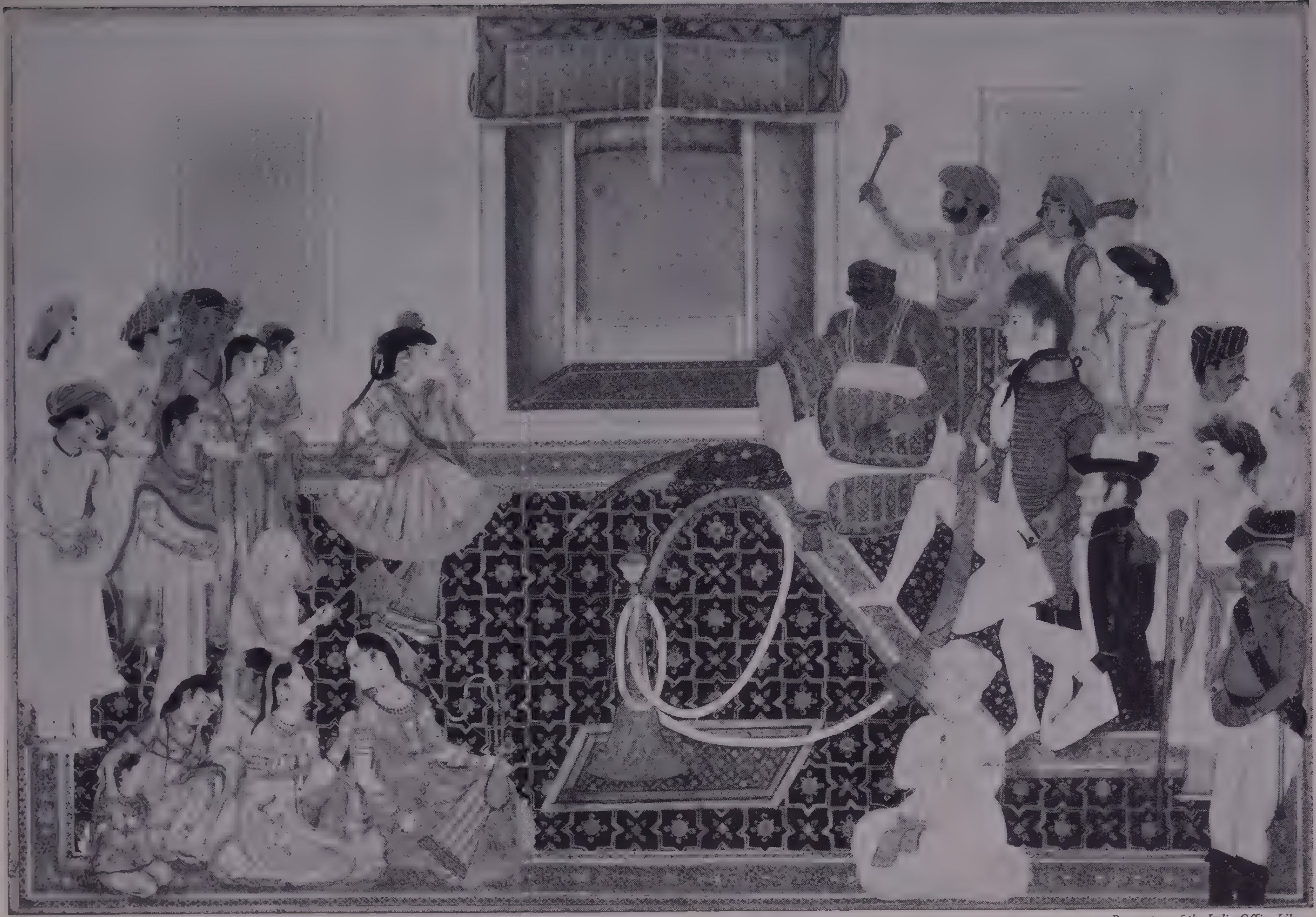
In the following article Mr. Watson, whose book on Gandhi—based on a remarkable series of broadcasts which he prepared for the B.B.C.—is being published later this year in Calcutta by Orient Longmans, describes the varying moods of the 300-year-old 'affair' between Britain and India. In a second, entitled "Unity in Diversity," he will review the constituent elements of that idea of India to which it is the task of the present generation of Indians to give both shape and reality

THE church of St Mary within the old fort at Madras is among the earliest of "the monuments of the British period" which are preserved in the new India. It is a place to tug the imagination towards the beginnings of that unique affair between Britain and India that displays, over the centuries, so many different moods. You come to it at one extremity of the immense beach that scalded the feet of early arrivals struggling ashore from the surf-boats. At the other pole, as it were, is the private garden-world of Adyar, headquarters of the Theosophical Society whence flowed in latter days influences upon the relations of East and West no less powerful for seeming to many people eccentric. Between these points lazes Madras, which Clive, in Kipling's dithyramb, kissed upon the mouth and eyes and brow: he also tried to kill himself in Writer's Buildings. With a touch of spaciousness and its roofline still at a decent height, Indo-Gothic neighbouring Engineer-Georgian, Madras can serve as a better starting-point than the thrusting cities further north.

Inside the old church the voices of Tamil choirboys at practice rise in English hymns among the carved scrolls and urns, the emblems and epitaphs of a fragment broken whole, as it seems, from our own history. The elegy embraces merchant-adventurers, captains of fortune, men who administered provinces and concluded treaties before they were twenty, wives who drooped and died pathetically swiftly, here or there a missionary "destined to labour in a strange vineyard". Each word of such an inscription can carry to the returning traveller prophetic echoes. Ideas of destiny came to entangle themselves in every British view of the connection with India. Labour took on the properties of a drug. Strangeness was never exorcized, and the fruits of the vineyard can still intoxicate the memory. What is at first sight paradoxical is that the figure of the Christian missionary himself—never pampered, sometimes tolerated but often frustrated by Company, Crown and Anglo-Indian society—should have been broadened and secularized into a symbol of what we have passionately desired to believe we were doing in India.

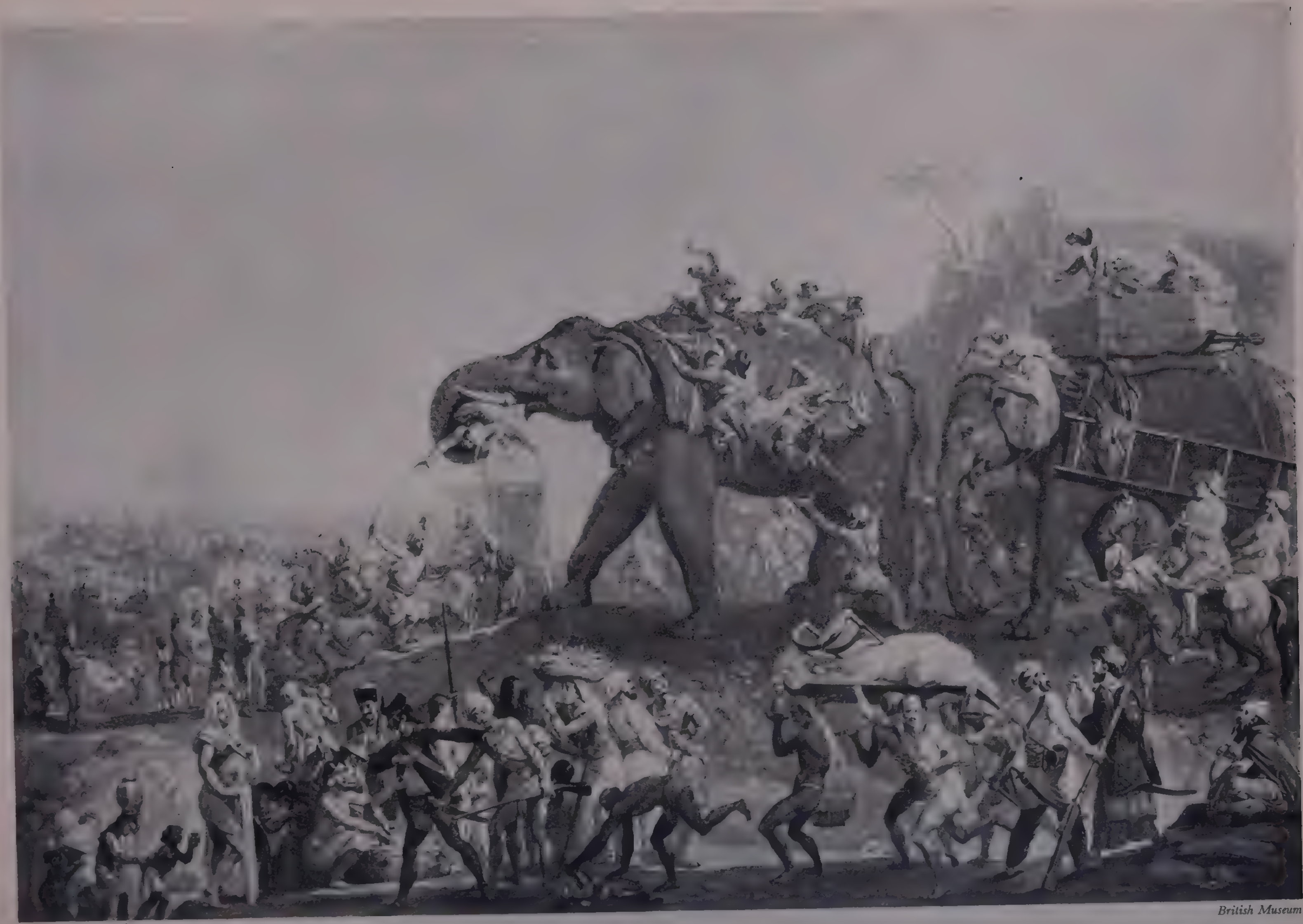
During World War II one of the last of the English recruits to the Indian Civil Service, Penderel Moon, tried in a small book called *Strangers in India* to express the troubled mind of a final torch-carrier in the marathon for which Clive, "that man not born for a desk", fired the starting-gun just two centuries ago. The choice, Mr Moon concluded, lay between being a missionary and being a mercenary. He himself, unable to resolve the personal dilemma in any other way, resigned from the I.C.S. and at length re-enlisted in the service of an independent India. But in varying terms, and with external causes tipping the balance one way or the other, something like this dilemma can be perceived from the beginning—or let us say since the "quiet trade" recommended by James I's ambassador Sir Thomas Roe as our only business in India began by its own momentum to roll towards dominion.

Mercenary or missionary? To take or to give? I suppose that it is possible to see India as the battleground of a collective English conscience. It is also possible to detect an uncanny process by which from time to time the alien dilemma lapses towards Hindu solutions—ideas of acceptance, recognition of a polarity of good and evil, or even a discovery of what the *Bhagavad Gita* may have been getting at with its indifference to the fruits of action. It is part of a fluctuating pattern of interplay which seems to challenge the description of the British in India as contemptuous, aloof, insular and overbearing. There is far too much evidence for that picture to be ignored or dismissed. But the unflattering portrait was itself (it is worth remembering) the work of Englishmen. There were always critics, there were always opponents; and of all fields of history India, with its abiding accent on the individual, presents one in which we are entitled to pay attention to the exceptions, the heretics, the outsiders. It invites us, moreover, to look not



By courtesy of the India Office Library

"If there is one thing that cannot be maintained while smoking a hookah, it is the stiff upper lip." Three 18th-century gentlemen, one Indian and



British Museum

A panorama of the fabulous, with an elephant "irritated by his driver" and a Warren Hastings famine-granary looming behind: the life-and-death babel

A panorama of the fabulous, with an elephant 'irritated by his driver' and a Warren Hastings famine-granary looming behind; the life-and-death habi

merely for different types of the exiled Briton, with different ideas of what he was about; but often enough, in the mass of personal records, for the conflict of successive moods within the same breast.

The mercenary, then, can be presumed to be willing, for the sake of the reward, to play the game according to the current rules. But what sort of reward? Clive, walking "through vaults which were thrown open to me alone, piled on either hand with gold and diamonds and jewels", was astonished by his own moderation, but his critics at home took a sterner view. Sir Walter Scott's Richard Middlemas, in *The Surgeon's Daughter*, cries out:

> To India! Happy dog, to India! Oh, Delhi! Oh, Golconda! Have your names no power? . . . India, where gold is won by steel, where a brave man cannot pitch his desire of fame and wealth too high, but that he may realize it if he have fortune for a friend.

"Loot" is one of some 900 words of Indian origin included in the *Oxford English Dictionary*; and today we would perhaps rather remember the enrichment of our language than the filling of the pockets of what used to be called "generous youth". But the prodigious age of adventure, in which Europeans of several countries shared (and also the remarkable Eurasian Skinner of Skinner's Horse) was not a Western export but a peculiarly Eastern feast. And at that table (as well as literally at banquets) there was racial equality. The British 'pacification', when it came to be accomplished, was a remarkable feat. But the latest historian of that achievement, Philip Woodruff, has permitted himself to wonder whether there was not some Indian regret when the free-for-all was ended.

> The colour and danger of the old fierce, merciless India, the intoxicating possibility of jewels and slave-girls beyond counting one day, and on the next of death, pashed to bloody rags at the feet of an elephant—all this was being filmed over by a viscous monotony of precedents, regulations and law-suits.

The rewards of service in a quieter period, if less spectacular, seemed princely beside estimates of the income and opportunities of Her Majesty's Indian subjects. It was in reflecting on a personal balance-sheet, setting the conditions of the game against its gains, that the legend grew up of India as "the grim stepmother of our kind". That casting of the balance-sheet has been a hot-weather occupation from the earliest days, and from the earliest days there are similar items. William Hickey, even by 18th-century standards, thought the servants wonderful. In the end, like others, he hated to leave India; and like others he began to get over his regrets as he approached the cliffs of Dover. Even in his day Englishwomen found or fancied that they had a better chance of everything they wanted by coming East. But Emily Eden accompanied her brother, Viceroy Lord Auckland, in a progress of the utmost grandeur from Calcutta to Simla in 1837 and commented in her spirited way:

> How people who might by economy and taking in washing and plain work have a comfortable back attic in the neighbourhood of Manchester Square, with a fireplace and a boarded floor, can come and march about India, I cannot guess.

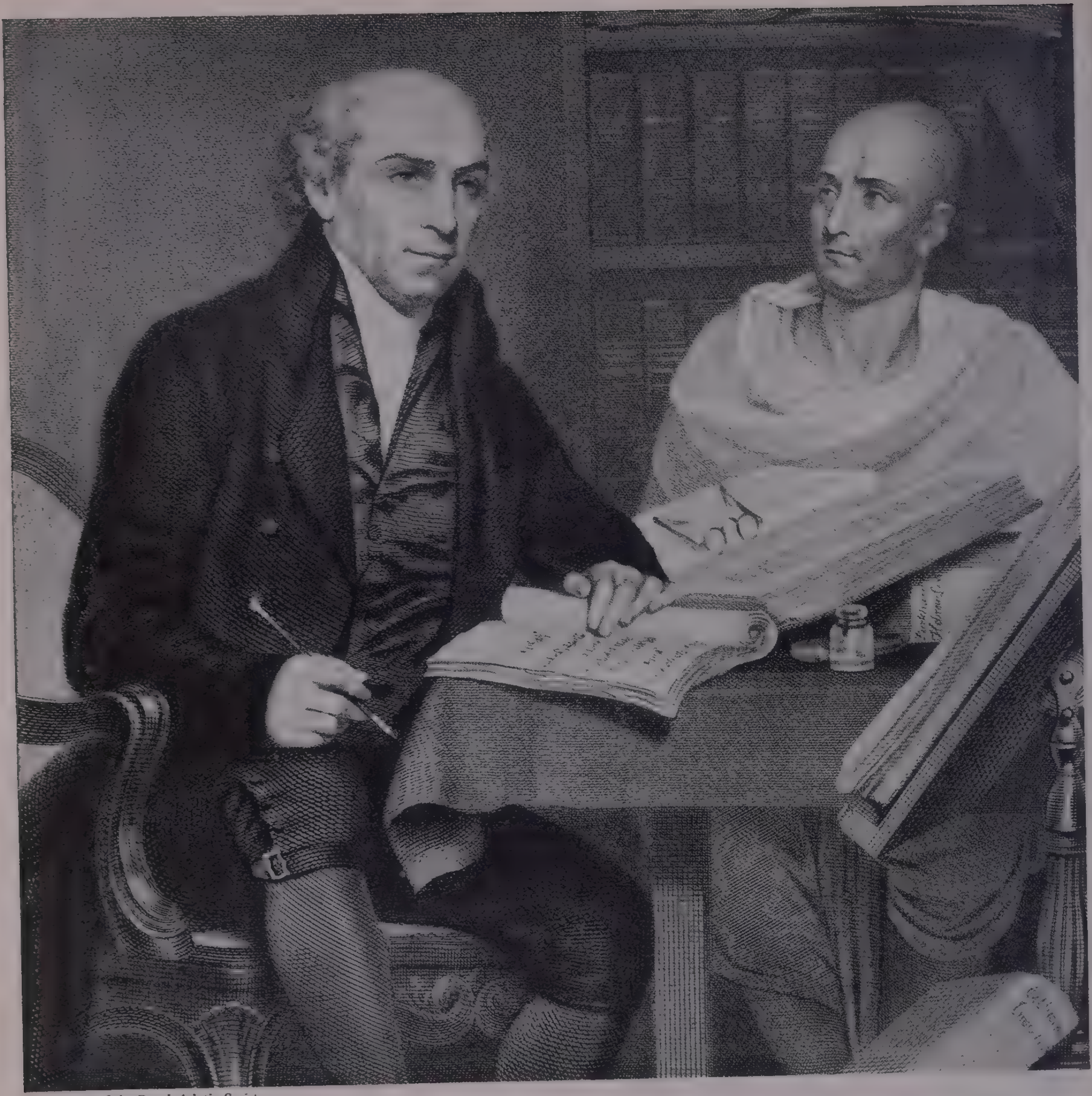
Lord Beveridge has published family papers in which the letter of an I.C.S. man to his wife in the hills sounds a recurrent note:

> At times when I sit in the garden in the cool of the evening and look at the beautiful crotons and way out to the blithe Deana, I feel as if I never could go home. India has burnt itself into me, and I dread the cold and wet country of my birth. The work, too, when not too hard is so interesting that I feel as if I could not quit it. Perhaps with a refuge in the hills we need not go home.

With Henry Beveridge we hear a whisper of the missionary, the man who needs the satisfaction of benevolent destiny, the justification which Lord Curzon was forever putting into majestic phrases. "To drive the blade a little forward in your time"—yes, but towards what end? Slowly, with the best and often anonymous servants of India, a sense of direction grew obsessive. Both British and Indians look back now upon a shared experience, and perhaps it is not too much to say that at the deeper level what sundered them when they were together binds them now that they are apart. Both are at least justified in selecting from that shared experience whatever satisfies their present image of themselves. It is not a distortion of history to recall the visionary moments of Englishmen who foresaw the end of the achievement. Whether or not they were 'typical', what matters is that they were right. Today Sir Henry Lawrence is not just the hero of Lucknow but the man who let slip the words:

> We cannot expect to hold India for ever. Let us so conduct ourselves . . . as, when the connection ceases, it may do so not with convulsions but with mutual esteem and affection.

The prospect of an end to the connection, however, is not the only possible inspiration. The value, the God-given nature, of the connection itself played its part. A suspicion of Christianizing intentions was present in the tangled origins of the Indian Mutiny.



By courtesy of the Royal Asiatic Society

The light from East and West. William Carey, ex-cobbler, Baptist missionary, studying with his Brahmin Pandit at Fort William College where he lectured in Bengali, Sanskrit and Marathi, 1801-31

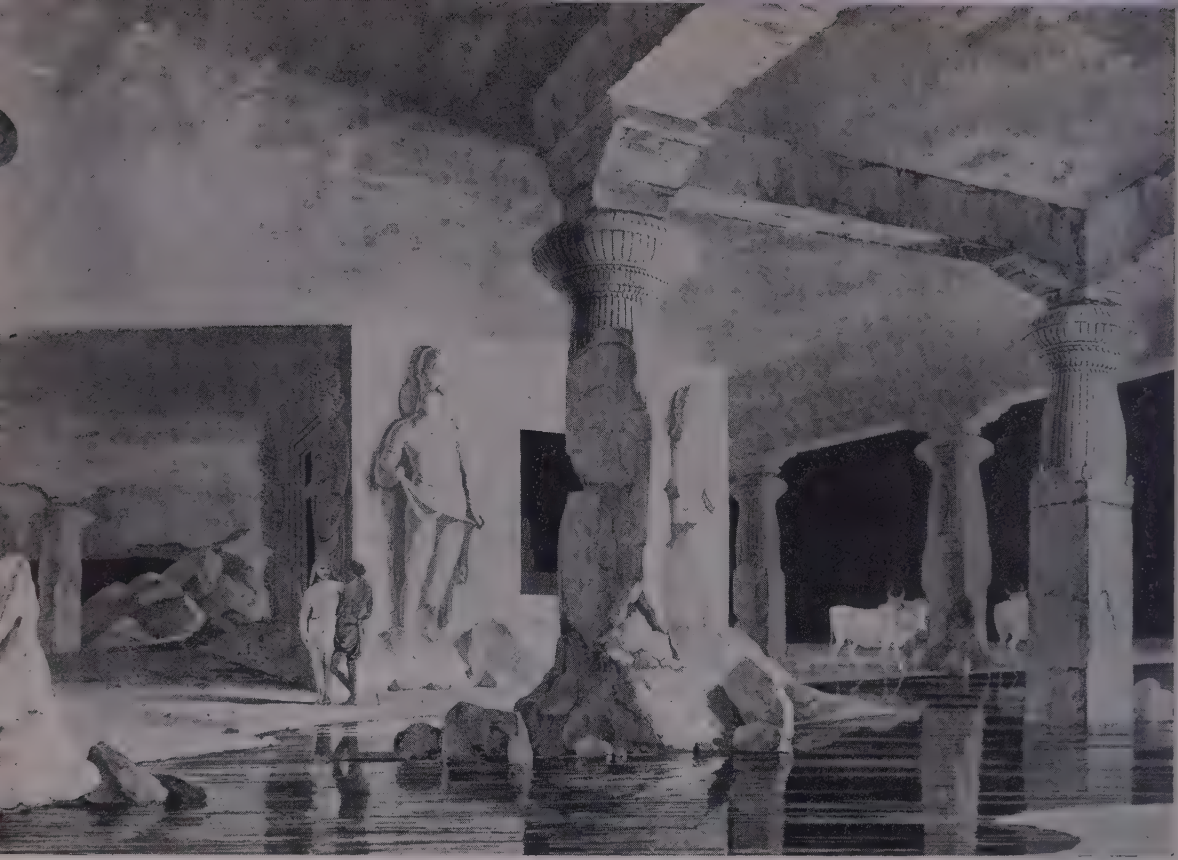
Christian faith certainly sustained the Europeans who suffered in it. The answer to it, in many minds, was not religious disengagement but a stronger beam of the light to lighten the Gentiles. Among the dedicated, almost biblical giants of the Punjab there was not only the galloping Nicholson, who attracted a sect of devotees known as the Nikal-Seyni Faquirs and cheerfully flogged them whenever they approached him. There was also Edwardes, on whom the proselytizing nature of the British destiny grew steadily. Ruskin knew him, and extolled him in *A Knight's Faith.* And through Ruskin's overcharged mind passed some of the strange threads that link Britain and India. The author of a notorious aesthetic diatribe against the Indian creative spirit was at length to exert a formative force upon the social and economic theories of Mahatma Gandhi.

The root of the matter is really this: that neither the mercenary nor the missionary, considered as conscious types, can bridge the gap between one culture and another. The mercenary's indifference, the missionary's superiority, alike inhibit the essential contact. If that were all, the story would be simply told and arid. The truth is at once more mysterious and more fruitful, with the individual and the accidental factors happily combining to upset more than one theory of causality, and the 'ifs' of history falling thick and fast. Aptly enough, one field of intellectual investigation in which the rediscovered Hindu sages were notably deficient was that of historical study. And one debt of the East to the West which was publicly acknowledged at the transfer of power in 1947 was the debt (in the words of the late Mrs Sarojini Naidu) to "the scholars of Europe who restored to us our pride in our ancient culture, to the antiquarians, to the archaeologists who have discovered for us our own hidden cities".

This is on the whole a neglected aspect of the relations between Britain and India, but it takes us straight back to that late 18th-century 'golden age' which social historians have found in the very period that offered Burke in Westminster Hall the bleeding provinces of his tremendous oratory. Burke was in fact of the same mind as his illustrious victim Warren Hastings in denouncing the ill behaviour and the false superiority of the young men who came out from England to make fortunes. Burke was the first statesman to speak in terms of trusteeship. Warren Hastings professed himself concerned to "ensure stability to the acquisition" of Clive's Bengal. But he spoke and wrote of securing friendship and acquiescence, and his own friendships with Indians were unmistakably genuine, gentlemanly and equal. The English had emerged from their isolated settlements and factories into a blaze of military prestige, and at least in the upper ranks of society had displayed a taste for cosmopolitan contacts. Zoffany took in three years of India in the *oeuvre* of an 18th-century English painter. He took the fantastic court of Oude on its own terms, as did the other Western residents. If the Nawab delighted in his imported English dray-horse and at times would dress (save for the wig) in Western finery, Zoffany could admire Indian miniature-painting and exercise his own hand at it. When the Nabobs returned to England their Indian customs were derided. Indian mistresses were denounced as part of the general corruption. But if there is one thing that cannot be maintained while smoking a hookah, it is the stiff upper lip. Even when allowance has been made for over-simplification of the 'golden age' its significance lies in the correction of the impression that Indian exclusiveness has been the main obstacle to close relationships. It is true that from the vantage-point of a generation that can associate happily with an English-educated Indian middle class we have been unsympathetic to the efforts required for surmounting earlier barriers. But it is also true that neither Hindu caste-restrictions nor Muslim seclusion of women prevented the intimate exchanges of the age of Warren Hastings.

The fundamentally favourable views expressed by Hastings of the people he had to govern were linked with an urbane intellectual esteem. Alexander Dow, familiar to us in the memoirs of his servant John Macdonald, came out to serve the Company in 1760 and at once began to draw attention to the concealed riches of Sanskrit. Warren Hastings, content to leave Hindu superstitions in the care of a Divinity who had so long tolerated them, declared forthrightly that behind them lay philosophic and literary achievements which "will survive when the British dominion in India shall have long ceased to exist, and when the forces which it once yielded of wealth and power are lost to remembrance". That is from the letter prefaced to Sir Charles Wilkins' translation of the *Bhagavad Gita* of 1785. In the last quarter of the century a handful of gifted men appointed to administrative or judicial posts in Bengal, foremost among them the prodigious Sir William Jones, laid the foundations of the Western discovery of Indian thought and Indian linguistics. If the palm was subsequently captured by German scholarship it was partly because there succeeded a period of relative neglect of which one British orientalist after another complained. And a modern orientalist, Professor Arberry, has connected that neglect with the celebrated dictum of Lord Macaulay in 1835 that "a single shelf of a good European library was worth the whole native literature of India and Arabia".

Macaulay's educational minute conveyed contempt as a natural corollary of the desire to improve—and to improve towards self-government. The 18th century had closed with the administrative reforms of Lord Cornwallis and Sir John Shore, in which corruption and intimacy had been destroyed together. The men who came out in the twenties and thirties under Amherst and Bentinck brought with them paternalism and European reforming zeal. Then, as since,



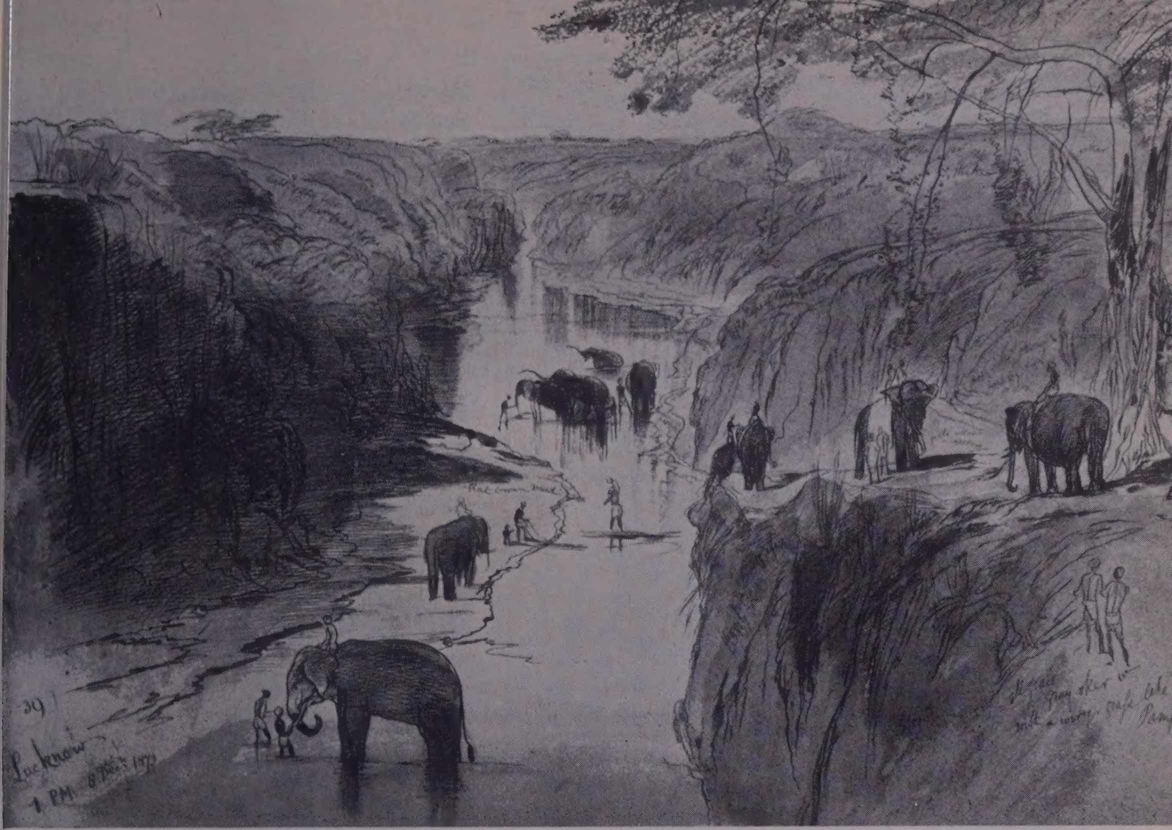
ourtesy of the India Office Library

The impact of the sublime was sensitively conveyed in the volumes of Oriental views by Thomas and William Daniell. This olympian rendering of Elephanta caves near Bombay was published in 1800

Bengal provided the extreme examples of separatism which would not have been shared by giants like Munro in the south, Elphinstone in the west, or Malcolm all over the place. By 1857, as the earliest British historian of the Mutiny (Sir William Kaye) perceived, "vehement self-assertion" was an unmistakable trait of the British in India, and a cause of the upheaval: the telegraph and the first railways were as much a part of it as was the policy of higher education in English.

The mission had been established. More and more it came to supply an individual and collective justification which the men of an earlier age had hardly seemed to require. Its effects were complicated by the undertow of reluctance—voiced again and again by the Company itself—to abandon a different justification: that of strict non-interference in religion. To put down *thuggee* could have been an extension of the civil duty to deal with banditry. To illegalize *suttee*, or widow-burning—which the Moghuls would have liked to do but dared not, and which the British approached most circumspectly—was an assertion of the penetration of Christian light into Hindu darkness; and the exaggeration and generalizing of that darkness became a psychological inevitability.

Macaulay, voraciously filling his leisure-hours in India with Greek and Latin texts, felt himself and his countrymen to be confronted by "a decomposing society", and the reforms could not have been effected if an influential number of Indians had not agreed with him. The cultural counter-attack began with Bengalis who accepted the Western premises. It is interesting to speculate how much the great revival of Indian literature, thought and self-respect owed in the first place to an English Baptist missionary, Carey, who in 1793 had established himself in the Danish enclave of Serampore just because the East India Company frowned on proselytism, and there studied Indian languages and encouraged their printing for the purpose of spreading the Word. Christianity would have been more successful in making



From Edward Lear's Indian Journal, *Jarrolds Publishers (London)*

The romantic mood that enticed many an amateur watercolourist also broke through the discomforts of Edward Lear's Indian tour (1873-5) in moments of surrender to the delight of eye and heart

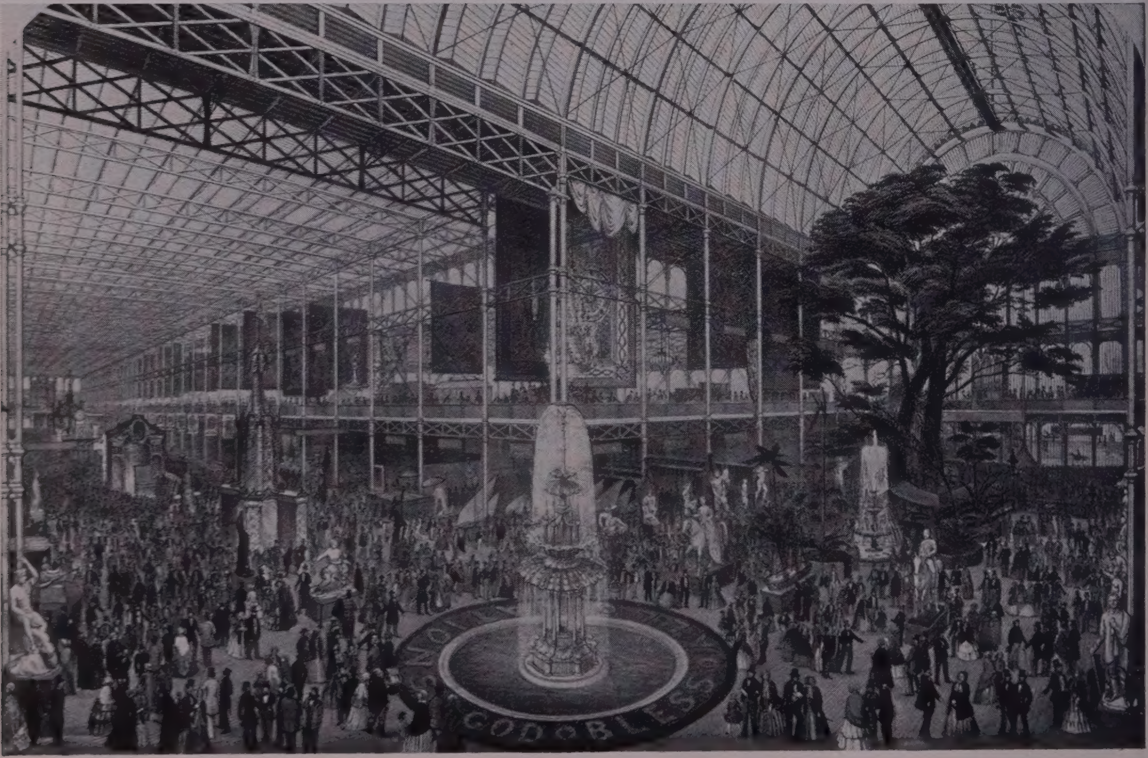
outright conversions if it had been less successful in attracting Indians of the stamp of Ram Mohun Roy and Dwarkanath Tagore, the patriarch of an illustrious family. For these, taking what they needed of the alien faith to purify and revive their own religious culture, raised in Western minds new questions about the nature of the destined mission. In the last three years of his life (1830-33) the figure of Ram Mohun Roy made a deep impression in England, where earnest people flocked to meet and hear him. His theistic fervour, his warmth of feeling for Christianity, reflected encouragingly the light from the West; yet in himself he was asserting that the East still had light to give. The seed fell into soil which was preparing itself for the theological controversies of the mid-century in which it gradually became possible in England to use the word "religion" in the plural.

Perhaps we can find a contour-line for the rising waters in the year 1893, with the curious "Parliament of Religions" held in Chicago. Vivekenanda was there, the brilliant evangelist of the mystic Ramakrishna, not as a half-Christian but as a Hindu lightbringer. From Britain the indefatigable Professor Rhys Davids was there, striving to prevent the serious new study of Buddhism and Pali from being swamped by esoteric enthusiasms. But Mrs Besant and the Theosophists were there too, and shortly afterwards the scene of her major activities was transferred to India and Ceylon. All that we need here recall of that extraordinary story is the immediate emphasis that was placed upon the recovery of Eastern glories and Eastern virtues and against—in general terms—the Western mission.

And so here and there, in English homes where the honoured cavalry-sword hung above the mantelpiece and the umbrellas stood in a stand made from an elephant's foreleg, the bookshelf might contain a translation of the *Upanishads*, Sir Edwin Arnold's *Light of Asia*, or even Mme Blavatsky's *Secret Doctrine*. It is a soldier's and administrator's story still; and in the leisure of retirement,

The album of Indo-Victoriana holds much more than the violent records of the Mutiny. Cashmere, so spelt, means Thomas Moore's Lalla Rookh, *songs at the drawing-room piano and* (left) *Indian shawls which the Empress Josephine was the first to bring into European fashion after Napoleon's Oriental expedition.* (Below) *The Great Exhibition of 1851 hung carpets like banners above the products of an India that was still John Company's business. (The Exhibition also exported, it sometimes seems, a furnishing style for Rajas' palaces.)* (Opposite, right) *The freemasonry of sport exchanged English cricket for Indian polo which, with a history of 2000 years, passed from Manipur to cavalry regiments in Bengal, and to England with the 10th Hussars in 1869.* (Opposite, bottom) *Queen Victoria at the Royal Naval Exhibition, 1891; depicting, in Lytton Strachey's words, as her long reign draws to a close, "the little old lady, with her white hair and her plain mourning clothes, in her wheeled chair . . . and then—close behind —with their immediate suggestion of singularity, of mystery and of power—the Indian servants"*

Both pictures from the Victoria & Albert Museum



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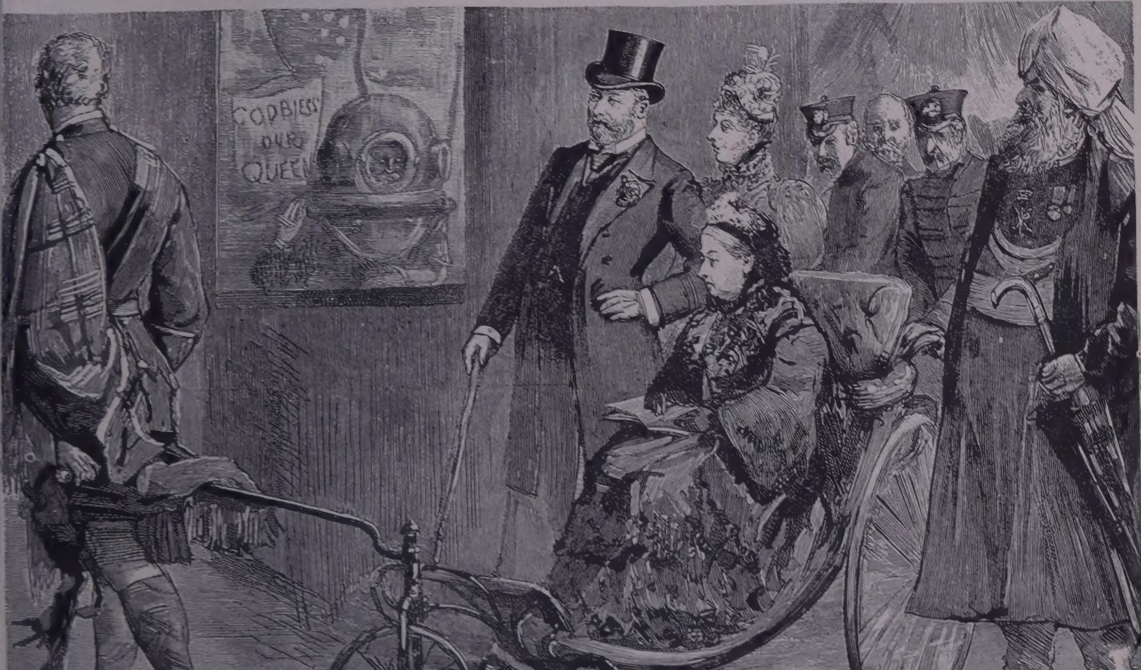

when the grim stepmother has vanished and the first bridal beauty of India is again remembered, relief from duty is as a rule provided by memories of incomparable sport, the morning freshness of a camping-site, the companionship of men as well as of horses. The intellectual speculations which were so naturally accepted in the 1780s creep in sideways, but they are there. It was, after all, an engineer-officer, Cunningham, who first opened up the great sites of Indian antiquity, and enabled their treasures to be saved from the local builder and finally handed back to an India fully conscious at last of her own greatness.

It was Sir Edwin Arnold, a fairly ordinary Victorian dominated and inspired throughout a long life by a brief experience of India, who wrote of repaying with democratic institutions the "heavy debt" due to the East "in religion, art, philosophy, language—in almost everything but the science of government". The sense of grandeur, of dominion—the symbolic figures of the turbaned Indian servants behind the aged Queen Victoria's carriage—could co-exist with the growing understanding that the justifying superiority was not general and racial, destined and eternal, but limited and specific. "The science of government", remarked Arnold, leaving it only a question of time and our own efficiency as teachers before that science should be fully transmitted and our justification gone. Today, if we have the same thoughts, they are in terms of technology. Let it be noticed, first that an independent India has honoured the British engineer who built the Ganges canal-system before the Indian Mutiny; and secondly that that engineer, Captain Cautley, saw himself in his first report as simply a successor of the great Indian irrigators of the distant past. For even science is woven into the pattern of exchange, wonder for wonder.

Wonder is indeed the word that has never died. Macaulay himself wrote on his arrival in Calcutta in 1834:

> But to be in such a land! The dark faces, with white turbans, and flowing robes: the trees not our trees: the very smell of the atmosphere that of a hothouse, and the architecture as strange as the vegetation.

Surely there is an echo of Milton's "dusk faces, with white silken turbans wreathed". And surely Milton himself, describing the grandeur of his enthroned Satan, was echoing Ambassador Roe's famous despatch from the court of the Great Moghul, "high in a gallery". Macaulay comes back to the loom later in the more calculated splendour of his evocation of the India that was present to the inward eye of Burke, and by him transmitted to generations of his countrymen; and so the great fabric grows, in colours now violent, now delicate, but in colours always. The shock to the imagination may come simply from reading in a temperate climate (to Burke it came from reading files); or visually at the first unforgettable impact, let us say of the peopled ghats of Benares or of cloths of every hue drying on the rocks in the bright air. Edward Lear suffered often from indigestion in travelling about India, but this is the first entry of his diary, at Bombay, November 22, 1873:

> Violent and amazing delight at the wonderful variety of life and dress here. Exquisite novelties, flowers, trees... O new palms! O flowers! O creatures! O beasts! Anything more overpoweringly amazing cannot be conceived. Colours and costumes and myriadism of impossible picturesqueness. These hours are worth what you will.

To trace this pattern we need not forget the homesickness—we have only to decide that it was paid for, even at moments for the less articulate envoys of our race for whom Kipling made himself the bard. There were times when the demand for the Eastern gift of wonder was surprisingly intense—the publisher Longman in 1814 offered Thomas Moore £3000 for a metrical romance on an Eastern subject, and got *Lalla Rookh*. There were aspects, also, that were forbidding—De Quincey had opium-dreams in which Shiva hated him, Vishnu lay in wait for him. Maud Diver's heroes might have nobly clouded brows as they thought of their daunting responsibilities, but the glitter played always: from isolated lines of Shakespeare and Marlowe down to the devoured mystery of Wilkie Collins' *Moonstone* or the moment when Karsavina, in a Covent Garden Command Performance of 1911, danced with only one thing in her eyes—the jewels embedded in the beard of a Maharajah in the audience.

It is too early for epitaphs on an experience which stretches, we must remember, from our Glorious Revolution to our Welfare State. But an attitude that may be today's can be read in a novel of India, *The Dark Goddess*, published this year. It is by Hallam Tennyson, great-grandson of the poet who celebrated the Defence of Lucknow, and almost its last words are: "Accept India... Accept the terror, the beauty. Then start to organize afterwards."

The organization, as far as we are concerned, is finished. But the acceptance still beckons